# NOTE

This Microfiche meets the quality requirements of the American National Standard for Microfiche of Documents (ANSI PH5.9-1975). However, because of imperfections in the document from which it was made, it contains images that are illegible or difficult to read. The source document for this microfiche is the best copy that could be obtained prior to filming.

CIS Congressional Information Service, Inc.
Washington, D.C.

# EMERGENCY WETLANDS RESOURCES ACT OF 1983

## (WITH SPECIFIC REFERENCE TO THE PROVISION RELATING TO THE OREGON INLET PROJECT IN NORTH CAROLINA)

(98-39)

# HEARING

BEFORE THE

SUBCOMMITTEE ON WATER RESOURCES

## COMMITTEE ON PUBLIC WORKS AND TRANSPORTATION
## HOUSE OF REPRESENTATIVES

NINETY-EIGHTH CONGRESS

FIRST SESSION

ON

## H.R. 3082

TO PROMOTE THE CONSERVATION OF MIGRATORY WATERFOWL AND TO OFFSET OR PREVENT THE SERIOUS LOSS OF WETLANDS BY THE ACQUISITION OF WETLANDS AND OTHER ESSENTIAL HABITAT, AND FOR OTHER PURPOSES

FEBRUARY 7, 1984

Printed for the use of the Committee on Public Works and Transportation

U.S. GOVERNMENT PRINTING OFFICE

33-653 O WASHINGTON : 1984

H641-13

## COMMITTEE ON PUBLIC WORKS AND TRANSPORTATION

JAMES J. HOWARD, New Jersey, *Chairman*

GLENN M. ANDERSON, California
ROBERT A. ROE, New Jersey
JOHN B. BREAUX, Louisiana
NORMAN Y. MINETA, California
ELLIOTT H. LEVITAS, Georgia
JAMES L. OBERSTAR, Minnesota
HENRY J. NOWAK, New York
ROBERT W. EDGAR, Pennsylvania
ROBERT A. YOUNG, Missouri
NICK JOE RAHALL II, West Virginia
DOUGLAS APPLEGATE, Ohio
GERALDINE A. FERRARO, New York
BRIAN J. DONNELLY, Massachusetts
DONALD JOSEPH ALBOSTA, Michigan
RON DE LUGO, Virgin Islands
GUS SAVAGE, Illinois
FOFO I. F. SUNIA, American Samoa
KATIE HALL, Indiana
DOUGLAS H. BOSCO, California
JAMES F. McNULTY, JR., Arizona
JIM MOODY, Wisconsin
ROBERT A. BORSKI, Pennsylvania
JOE KOLTER, Pennsylvania
TIM VALENTINE, North Carolina
EDOLPHUS TOWNS, New York
WILLIAM O. LIPINSKI, Illinois
MICHAEL A. ANDREWS, Texas
TOM VANDERGRIFF, Texas
J. ROY ROWLAND, Georgia
JAMES McCLURE CLARKE, North Carolina
ROBERT E. WISE, JR., West Virginia

GENE SNYDER, Kentucky
JOHN PAUL HAMMERSCHMIDT, Arkansas
BUD SHUSTER, Pennsylvania
ARLAN STANGELAND, Minnesota
NEWT GINGRICH, Georgia
WILLIAM F. CLINGER, JR., Pennsylvania
GUY MOLINARI, New York
E. CLAY SHAW, JR., Florida
BOB McEWEN, Ohio
FRANK WOLF, Virginia
THOMAS E. PETRI, Wisconsin
HAL DAUB, Nebraska
LYNN MARTIN, Illinois
VIN WEBER, Minnesota
ROBERT F. (BOB) SMITH, Oregon
DON SUNDQUIST, Tennessee
NANCY L. JOHNSON, Connecticut
RON PACKARD, California

---

### SUBCOMMITTEE ON WATER RESOURCES

ROBERT A. ROE, New Jersey, *Chairman*

JOHN B. BREAUX, Louisiana
DONALD JOSEPH ALBOSTA, Michigan
RON DE LUGO, Virgin Islands
J. ROY ROWLAND, Georgia
GLENN M. ANDERSON, California
JAMES L. OBERSTAR, Minnesota
HENRY J. NOWAK, New York
ROBERT W. EDGAR, Pennsylvania
ROBERT A. YOUNG, Missouri
NICK JOE RAHALL II, West Virginia
GERALDINE A. FERRARO, New York
BRIAN J. DONNELLY, Massachusetts
GUS SAVAGE, Illinois
FOFO I. F. SUNIA, American Samoa
JAMES F. McNULTY, JR., Arizona
JIM MOODY, Wisconsin
JAMES J. HOWARD, New Jersey
(Ex Officio)

ARLAN STANGELAND, Minnesota
JOHN PAUL HAMMERSCHMIDT, Arkansas
WILLIAM F. CLINGER, JR., Pennsylvania
GUY MOLINARI, New York
HAL DAUB, Nebraska
VIN WEBER, Minnesota
ROBERT F. (BOB) SMITH, Oregon
RON PACKARD, California
GENE SNYDER, Kentucky
(Ex Officio)

# CONTENTS


Page

H.R. 3082: To promote the conservation of migratory waterfowl and to offset or prevent the serious loss of wetlands by the acquisition of wetlands and other essential habitat, and for other purposes ..... v

TESTIMONY

Daniels, Hon. Melvin R., Jr., North Carolina State senator ..... 213
Daniels, Michael "Mickey", Wanchese Fish Co ..... 213
Deems, George C., immediate past president and chairman, government and affiliated affairs, North Carolina Beach Buggy Association, Inc., Nags Head, N.C ..... 213
Desanto, Robert S., counsel to the State of North Carolina ..... 213
Etheridge, Willie, Jr., commercial fisherman, Wanchese, N.C ..... 213
Hunter, Ken, Harpers Ferry, W. Va ..... 213
Jones, Hon. Walter B., a Representative in Congress from the State of North Carolina ..... 6
Lienesch, William C., Assistant Director for Federal Activities, National Parks and Conservation Association ..... 83
McDonald, Dan ..... 213
Midgett, Arvin A., charter boat operator and member of Dare County Oregon Inlet Commission, Manteo, N.C ..... 213
Osann, Edward R., Director, Water Resources Program, National Wildlife Federation ..... 71
Potter, Hon. J. Craig, Deputy Assistant Secretary, Department of the Interior, Fish and Wildlife and Parks, accompanied by Robert McCue, Regional Chief Scientist, National Park Service; and Dr. G. Jay Gogue, Chief, Branch of Federal Projects, Division of Ecological Services, Fish and Wildlife Service ..... 34
Schiffman, Harry Brinkley, marina-tugboat and charter boat operator, member of the Dare County Oregon Inlet Commission ..... 213
Summers, Hon. James A., secretary, North Carolina Department of Natural Resources and Community Development ..... 62
Tillett, Gilbert R. "Moon", president, Oregon Inlet Users Association ..... 213
Vallianos, Limberios, Chief, Coastal Engineering Branch, Wilmington District, Corps of Engineers, Department of the Army ..... 8, 43, 104
Wheeler, Terry, Dare County, N.C ..... 213

SUBMISSIONS FOR THE RECORD

Daniels, Michael, Wanchese Fish Co., statement ..... 194
Deems, George C., immediate past president and chairman, government and affiliated affairs, North Carolina Beach Buggy Association, Inc., Nags Head, N.C.:
  Statement ..... 111
  Supplemental statement ..... 125
Etheridge, Willie Jr., commercial fisherman, Wanchese, N.C.:
  Statement ..... 190
  Letter from Carl Bock, Jr., president, Roanoke Island Steel & Boat Works, Inc ..... 236
Gray, Thomas B., chairman, N.C. Seafood Industrial Park Authority, member, Dare County Board of Commissioners, Buxton, N.C., statement ..... 183
Hunter, Ken. Harpers Ferry, W. Va., statement ..... 137
Jones, Hon. Walter B., a Representative in Congress from the State of North Carolina, statement ..... 2

Page

Lienesch, William C., Assistant Director for Federal Activities, National Parks and Conservation Association:
Statement ... 76
Statement of Dr. Orrin H. Pilkey, Jr., professor of Geology, Duke University before the Subcommittee on Public Lands and National Parks of the House Committee on the Interior and Insular Affairs, January 30, 1984 ... 83
Statement of Dr. Stanley R. Riggs, professor of geology, East Carolina University before the Subcommittee on Public Lands and National Parks of the House Committee on Interior and Insular Affairs, January 30, 1984 ... 85
Reports on the "Potential Effects of the Proposed Oregon Inlet Jetties on Shore Processes along the Outer Banks of North Carolina" ... 87
Midgett, Arvin A., charter boat operator, and member of Dare County Oregon Inlet Commission, Manteo, N.C., statement ... 180
Osann, Edward R., Director, Water Resources Program, National Wildlife Federation, statement ... 70
Potter, Hon. J. Craig, Deputy Assistant Secretary for Fish and Wildlife and Parks, Department of the Interior, letter from L. K. (Mike) Gantt, Field Supervisor, Division of Ecological Services, Fish and Wildlife Service, to Col. Robert K. Hughes, District Engineer, U.S. Army Corps of Engineers, dated April 29, 1983 ... 51
Schiffman, Harry Brinkley, marina-tugboat and charter boat operator, member of the Dare County Oregon Inlet Commission, statement ... 147
Summers, Hon. James A., Secretary, North Carolina Department of Natural Resources and Community Development:
Statement ... 55
Updated analysis of the Oregon Inlet project, April 21, 1983 ... 57
Tillett, Gilbert R. "Moon", president, Oregon Inlet Users Association, statement ... 201
Vallianos, Limberios, Chief, Coastal Engineering Branch, Wilmington District, Corps of Engineers, Department of the Army:
Oregon Inlet dredging history ... 9
Map of Oregon Inlet ... 20
Response to Representative Stangeland's request for additional information ... 24

## ADDITIONS TO THE RECORD

DeSanto, Dr. Robert S., chief scientist, DeLeaw, Cather & Co., statement ... 239
Fogliano, Vincent, vice president, Fair Fish Co., Fulton Fish Market, New York, N.Y., statement ... 241
Mann, Capt. D. E. Jr., Panama Canal pilot, letter ... 242
Mann, Orman L., chairman, Dare County Oregon Inlet Commission, statement ... 243
North Carolina Beach Buggy Association, Inc., Robert Sheets, president, statement ... 245
Scarborough, Phil, Manteo, N.C., statement ... 249
Virginia Wildlife Federation, Donald L. West, president, letter ... 249

98TH CONGRESS
1ST SESSION

# H. R. 3082

[Report No. 98-440, Part I]

To promote the conservation of migratory waterfowl and to offset or prevent the serious loss of wetlands by the acquisition of wetlands and other essential habitat, and for other purposes.

---

IN THE HOUSE OF REPRESENTATIVES

MAY 23, 1983

Mr. FORSYTHE introduced the following bill; which was referred to the Committee on Merchant Marine and Fisheries

OCTOBER 25, 1983

Additional sponsors: Mr. BREAUX, Mr. HUGHES, Mr. HUTTO, Mr. JONES of North Carolina, Mr. TAUZIN, Mr. SIKORSKI, and Mr. PATTERSON

OCTOBER 25, 1983

Reported with an amendment, referred to the Committees on Interior and Insular Affairs and Public Works and Transportation for a period ending not later than March 1, 1984, for consideration of such provisions of the bill and amendment as fall within the jurisdictions of those committees pursuant to clauses 1 (l) and (p) of rule X, respectively

[Strike out all after the enacting clause and insert the part printed in italic]

---

# A BILL

To promote the conservation of migratory waterfowl and to offset or prevent the serious loss of wetlands by the acquisition of wetlands and other essential habitat, and for other purposes.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* ~~That this Act may be cited as the "Emergency Wetlands Resources Act of 1983".~~

~~FINDINGS AND STATEMENT OF PURPOSE~~

~~SEC. 2. (a) FINDINGS.—The Congress finds that—~~

~~(1) wetlands play an integral role in maintaining the quality of life through material contributions to our national economy, food supply, water supply and quality, flood control, and fish, wildlife, and plant resources, and thus to the health, safety, recreation, and economic well-being of all our citizens;~~

~~(2) wetlands provide habitat essential for the breeding, spawning, nesting, migration, wintering, and ultimate survival of a major portion of the Nation's migratory and resident fish and wildlife, including migratory birds, endangered species, commercially and recreationally important finfish, shellfish and other aquatic organisms, and contain many unique species and communities of wild plants;~~

~~(3) our Nation's migratory bird treaty obligations with Canada, Mexico, Japan, the Union of the Soviet Socialist Republics, and with various countries in the Western Hemisphere require Federal protection of wetlands used by migratory birds for breeding, winter-~~

ing or migration, and are needed to achieve and to maintain optimum population levels, distributions, and patterns of migration;

(4) wetlands, and the fish, wildlife, and plants dependent thereon, provide significant recreational and commercial benefits, including—

(A) contributions to a commercial marine harvest valued at over $10,000,000,000 annually;

(B) support for a major portion of the Nation's multi-million-dollar annual fur and hide harvest; and

(C) fishing, hunting, birdwatching, nature observation, and other wetland-related recreational activities that generate billions of dollars annually;

(5) wetlands enhance the Nation's water quality and supply by serving as ground water recharge areas, nutrient traps and chemical sinks;

(6) wetlands provide a natural means of flood and erosion control by retaining water during periods of high runoff, thereby protecting against loss of life and property;

(7) wetlands constitute only a small percentage of the land area of the United States, are estimated to have been reduced by half in the contiguous States

since the founding of our Nation, and continue to disappear by hundreds of thousands of acres each year;

(8) certain activities of the Federal Government have inappropriately altered or assisted in the alteration of wetlands, thereby unnecessarily stimulating and accelerating the loss of these valuable resources and the environmental and economic benefits that they provide; and

(9) the existing Federal, State, and private cooperation in wetlands conservation should be strengthened in order to minimize further losses of these valuable areas and to assure their management in the public interest for this and future generations.

(b) PURPOSE.—It is the purpose of this Act to promote, in concert with other Federal and State statutes and programs, the conservation of our Nation's wetlands in order to maintain the public benefits they provide and to fulfill international obligations contained in various migratory bird treaties and conventions with Canada, Mexico, Japan, the Union of Soviet Socialist Republics, and with various countries in the Western Hemisphere by—

(1) intensifying cooperative efforts among private interests and local, State, and Federal governments for the management and conservation of wetlands; and

(2) intensifying efforts to protect the Nation's wetlands through acquisition in fee, easements, or other interests and methods by local, State, and Federal governments and the private sector.

DEFINITIONS

SEC. 3. For purposes of this Act, the term—

(a) "committees" means the Committee on Merchant Marine and Fisheries of the House of Representatives and the Committee on Environment and Public Works of the Senate;

(b) "Secretary" means the Secretary of the Interior; and

(c) "wetland" means land transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. Generally, wetlands are areas inundated or saturated by surface or ground water frequently enough and for long enough duration to support a prevalence of plants or animals typically adapted to life in saturated soil conditions including but not limited to such areas as coastal or inland marshes or estuaries, river-associated water-saturated areas, inland lakes, potholes, bogs, mudflats, or bottom land hardwood forests.

TITLE I—REVENUES FOR MIGRATORY BIRD CONSERVATION FUND

ADMISSION FEES AT CERTAIN REFUGE UNITS

SEC. 101. (a) Notwithstanding the provisions of the Land and Water Conservation Fund Act of 1965 (78 Stat. 897; 16 U.S.C. 460l–4 et seq.), in order to provide additional revenues for the conservation of the Nation's wetland resources, entrance or admission fees may be charged at certain units of the National Wildlife Refuge System designated by the Secretary of the Interior for such fees (referred to in this Act as "designated units").

(b) A valid migratory bird hunting and conservation stamp, as established under the Act of March 16, 1934 (48 Stat. 451; 16 U.S.C. 718a), as amended, or a valid Golden Eagle Passport, as established under the Land and Water Conservation Fund Act of 1965 (78 Stat. 897; 16 U.S.C. 460l–4 et seq.), shall function as a permit for entry into any designated unit. Use of a valid migratory bird hunting and conservation stamp as a permit under this subsection shall not affect the requirements of the Act of March 16, 1934 (48 Stat. 451; 16 U.S.C. 718a), as amended, relating to the taking of migratory waterfowl.

(c)(1) Permits for a single visit to any designated unit shall be made available by the Secretary of the Interior at reasonable admission fees for persons who choose not to pur-

chase an annual permit as provided in subsection (b) of this section. For purposes of this subsection, "single visit" means a more or less continuous stay within a designated unit by a person or group described in subsection (d) of this section. Payment of a single-visit admission fee and issuance of a single-visit permit shall authorize exits from and reentries to a single-designated unit for a period of from one to fifteen days. Such period shall be defined for each designated unit by the Secretary based upon a determination of the period of time reasonably and ordinarily necessary for such a single visit.

(2) Notwithstanding section 401 of the Act of June 15, 1935 (49 Stat. 383; 16 U.S.C. 715a), as amended, revenues from permits under this subsection, less 10 per centum to be used—

(A) to defray administrative costs incurred by the Secretary in providing for such permits; and

(B) for the purposes for which the designated units have been established;

shall be paid into the migratory bird conservation fund established under section 4 of the Act of March 16, 1934 (48 Stat. 451; 16 U.S.C. 718d), as amended.

(d) A permittee pursuant to subsection (b) or (c) of this section and any persons accompanying such permittee in a single, private, noncommercial vehicle, or, where entry to the

area is by any means other than a single, private noncommercial vehicle, the permittee and any accompanying spouse, children, or parents shall be entitled to general entrance into any designated unit.

(e) The Secretary of the Interior shall establish procedures providing for the issuance of a lifetime admission permit to any citizen of, or person domiciled in, the United States, if such citizen or person applies for such permit, and is blind or permanently disabled. Such procedures shall assure that such permit shall be issued only to persons who have been medically determined to be blind or permanently disabled for purposes of receiving benefits under Federal law as a result of said blindness or permanent disability as determined by the Secretary. Such permit shall be nontransferable and shall be issued without charge.

(f) The Secretary of the Interior shall establish procedures providing for the issuance of a lifetime admission permit to any citizen of, or person domiciled in, the United States, if such citizen or person applies for such permit, and is sixty-two years of age or older. Such permit shall be nontransferable and shall be issued without charge.

(g) Special admission permits for uses such as group activities, or for travel by private, noncommercial vehicle over any road or highway to any land in which a permittee has a property interest if such land is within any designated unit,

may be issued in accordance with procedures and at fees established by the Secretary. Revenues from such permits shall be paid into the migratory bird conservation fund established under section 4 of the Act of March 16, 1934 (48 Stat. 451; 16 U.S.C. 718d), as amended.

(h) Any permit authorized by this section shall be nontransferable and shall be available for purchase at any designated unit. Such permit shall not authorize any uses for which fees are charged under the Land and Water Conservation Fund Act of 1965 (78 Stat. 897; 16 U.S.C. 460l–4 et seq.).

(i) All fees established pursuant to this section shall be fair and equitable, taking into consideration the direct and indirect cost to the Government, the benefits to the recipient, the public policy or interest served, the comparable fees charged by non-Federal public agencies, the economic and administrative feasibility of fee collection and other pertinent factors. Clear notice that a fee has been established pursuant to this section shall be prominently posted at each designated unit and at appropriate locations therein and, to the extent practicable, shall be included in publications distributed at such units.

(j) Periodic reports indicating the number and location of fee collection areas, the number and location of potential fee collection areas, capacity and visitation information, the fees

collected, and other pertinent data, shall be coordinated and compiled by the United States Fish and Wildlife Service and transmitted to the Committee on Merchant Marine and Fisheries of the United States House of Representatives and the Committee on Environment and Public Works of the United States Senate. Such reports, which shall be transmitted no later than March 31 annually, shall include any recommendations which the Service may have with respect to improving this aspect of the migratory bird conservation fund program.

PRICE OF MIGRATORY BIRD HUNTING AND CONSERVATION STAMP

SEC. 102. Section 2(b) of the Act of March 16, 1934 (48 Stat. 451; 16 U.S.C. 718b), as amended, is amended by striking out "$7.50" and inserting in lieu thereof "$10" and by striking out "any hunting year" and inserting in lieu thereof "hunting years 1984 and 1985, $12.50 for hunting years 1986 and 1987, and $15 for each hunting year thereafter,".

TRANSFERS TO MIGRATORY BIRD CONSERVATION FUND

SEC. 103. Notwithstanding any other provision of law, all import duties collected on arms and ammunition, as specified in subpart A of part 5 of schedule 7 of the Tariff Schedules of the United States, shall, beginning on the date of the enactment of this Act, be paid into the migratory bird conser-

vation fund established under section 4 of the Act of March 16, 1934 (48 Stat. 451; 16 U.S.C. 718d), as amended.

SEC. 104. For the period beginning on October 1, 1983, and ending at the close of September 30, 1993, $75,000,000 shall be paid each year from the land and water conservation fund established under the Land and Water Conservation Fund Act of 1965 (78 Stat. 897; 16 U.S.C. 460l–4 et seq.) into the migratory bird conservation fund established under section 4 of the Act of March 16, 1934 (48 Stat. 451; 16 U.S.C. 718d), as amended.

## TITLE II—FINANCIAL ASSISTANCE TO STATES FOR WETLANDS ACQUISITION

SEC. 201. (a) Subsection (b) of section 4 of the Act of March 16, 1934 (48 Stat. 451; 16 U.S.C. 718d), as amended, is amended by striking out "subsection (c)" and inserting in lieu thereof "subsections (c) and (d)".

(b) Section 4 of the Act of March 16, 1934 (48 Stat. 451; 16 U.S.C. 718d), as amended, is amended by inserting at the end thereof the follow new subsection:

"(d)(1) For the period beginning on October 1, 1983, and ending at the close of September 30, 1993, the Secretary of the Interior is authorized to provide from the fund financial assistance not to exceed $50,000,000 annually to the States for purposes of wetlands acquisition, as defined in subsection (d)(2) of this section. Payments for such purposes may be

made to the States as hereinafter provided, subject to such terms and conditions as the Secretary considers appropriate and in the public interest.

"(2) For purposes of this subsection, the term 'wetlands acquisition' means obtaining a property interest in wetlands or associated areas by purchase or lease if obtaining such interest contributes appreciably to the preservation of said wetlands and associated populations of fish, wildlife, and plants.

"(3) Sums available from the fund for wetlands acquisition under this subsection shall be apportioned among the States by the Secretary, whose determination shall be final, on the basis of (i) the ratio which each State's obligation of funds, other than Federal funds, to wetlands acquisition bears to the total amount of funds, other than Federal funds, obligated by the States to wetlands acquisition during the most recent fiscal year for which the calculation of such funds is practicable, as determined by the Secretary; less (ii) an amount not to exceed 1 per centum of the total of amounts allocated to the States under this subsection, to be used to defray administrative costs incurred by the Secretary in making payments under this subsection. Such apportionments shall be adjusted equitably so that no less than one-half of 1 per centum of the total amount apportioned shall be allocated to each State.

"(4) A State may elect to avail itself of the benefits of this subsection by—

"(A) submitting to the Secretary a comprehensive fish and wildlife resource management plan which shall ensure the perpetuation of these resources for the economic, scientific, and recreational enrichment of the people. Such plans will be prepared with opportunity for public comment and provided in a format required by the Secretary which shall be compatible with standards and formats required of States for other fish and wildlife grants administered by the Secretary, particularly the Federal Aid in Wildlife Restoration Act (16 U.S.C. 669 et seq.), Federal Aid in Sport Fish Restoration Act (16 U.S.C. 777 et seq.), and Fish and Wildlife Conservation Act of 1980 (16 U.S.C. 2901 et seq.). If the Secretary finds that such plans conform to standards established by him and approves such plans, he may finance up to 75 per centum of the cost of implementing segments of those plans meeting the purposes of this subsection from funds apportioned under this subsection; or

"(B) submitting to the Secretary full and detailed statements of any wetlands acquisition project proposed for that State. If the Secretary finds, after opportunity for public comment, that such project meets with the

standards set by him and approves said project, the State shall furnish the Secretary such surveys, plans, specifications, and estimates therefor as may be required. If the Secretary approves the plans, specifications, and estimates for the project, he shall so notify the State within ninety days of receiving said plans, specifications, and estimates and immediately set aside so much of the fund as represents the share of the United States payable under this subsection on account of such project, which sum so set aside shall not exceed 75 per centum of the total estimated cost thereof.

"(5) The Secretary shall approve only such comprehensive plans or projects as may be substantial in character and design and the expenditure of funds hereby authorized shall be applied only to such approved wetlands acquisition plans or projects and if otherwise applied they shall be replaced by the State before it may participate in any further apportionment under this subsection. No payment of any money apportioned under this subsection shall be made on any comprehensive wetlands acquisition plan or project until an agreement to participate therein shall have been submitted to and approved by the Secretary.

"(6) When the Secretary finds that any approved project or segment of an approved comprehensive plan has been

completed in compliance with approved plans and specifications or an approved comprehensive plan the Secretary shall cause to be paid to the proper authority of such State the amount set aside for said project or plan. The Secretary may from time to time make payments on said project or plan as the same progresses; but these payments, including previous payments, if any, shall not be more than the United States pro rata share of the project in conformity with said plans and specifications or said comprehensive plan.

"(7) Any amount of any apportionment under paragraph (3) of this subsection that for any fiscal year remains unobligated at the close thereof shall continue to be available for obligation until the close of the succeeding fiscal year. At the close of such succeeding fiscal year, such amounts shall remain in the migratory bird conservation fund established under section 4 of the Act of March 16, 1934 (48 Stat. 451; 16 U.S.C. 718d), as amended, and shall become available for expenditure under said Act.

"(8) The Secretary is authorized to make rules and regulations for carrying out the provisions of this subsection.".

## TITLE III—WETLANDS INVENTORY AND TREND ANALYSIS

SEC. 301. (a) The Secretary, acting through the Director of the United States Fish and Wildlife Service, shall continue the National Wetlands Inventory project and shall—

(1) produce, by September 30, 1986, final National Wetlands Inventory maps for the areas that have been identified by the Service as top priorities for mapping, including the entire coastal zone of the United States, floodplains of major rivers, and the Prairie Pothole region;

(2) produce, by September 30, 1988, final National Wetlands Inventory maps for those portions of the contiguous United States for which final maps have not been produced earlier;

(3) produce, as soon as practicable, final National Wetlands Inventory maps for Alaska and other noncontiguous portions of the United States; and

(4) produce, by September 30, 1985, and at ten-year intervals thereafter, reports to update and improve the information contained in the report dated September 1982 and entitled "Status and Trends of Wetlands and Deepwater Habitat in the Coterminous United States, 1950's to 1970's".

(b) There are authorized to be appropriated the following sums, to remain available until expended:

(1) $7,000,000 per fiscal year for the fiscal years beginning on October 1, 1983, and ending at the close of September 30, 1986, to carry out paragraph (1) of subsection (a) of this section:

(2) $5,000,000 per fiscal year for the fiscal years beginning on October 1, 1987, and ending at the close of September 30, 1993, to carry out paragraphs (2) and (3) of subsection (a) of this section; and

(3) $3,000,000 per fiscal year for the fiscal years beginning on October 1, 1983, and ending at the close of September 30, 1995, to carry out paragraph (4) of subsection (a) of this section.

REPORT TO CONGRESS

SEC. 302. (a) The Secretary shall, by September 30, 1985, prepare and submit to the committees a report regarding wetlands losses in the United States.

(b) The report required under subsection (a) shall contain—

(1) an analysis of the causes of wetlands destruction and degradation;

(2) a compilation and analysis of Federal statutory and regulatory mechanisms, including expenditures and financial assistance, which induce wetlands destruction or degradation;

(3) a compilation and analysis of Federal expenditures resulting from wetlands destruction and degradation;

(4) an analysis of the environmental and economic impact of eliminating or restricting future Federal ex-

penditures and financial assistance, whether direct or indirect, which have the effect of encouraging the destruction or degradation of wetlands, including but not limited to: public works expenditures; assistance programs such as price-support programs, commodity loans and purchase programs, and disaster assistance programs; soil conservation programs; and certain income tax provisions;

(5) an analysis of the environmental and fiscal impact of failure to restrict future Federal expenditures and financial assistance which have the effect of encouraging the destruction or degradation of wetlands, including but not limited to: assistance for normal silviculture activity (such as plowing, seeding, planting, cultivating, minor drainage, or harvesting for the production of fiber or forest products); Federal expenditures required incident to studies, evaluations, design, construction, operation, maintenance, or rehabilitation of Federal water resource development activities, including channel improvements; the commodity loans and purchases program, and cotton, feed grain, wheat, and rice production stabilization programs administered by the Department of Agriculture; Federal expenditures for the construction of publicly owned or publicly operated highways, roads, structures, or facilities that

~~are essential links in a larger network or system; and general revenue-sharing grants made under section 102 of the State and Local Fiscal Assistance Amendments of 1972 (86 Stat. 919; 31 U.S.C. 1221); and~~

~~(6) recommendations for the conservation of wetlands resources based on an evaluation and comparison of all management alternatives, and combinations thereof, such as State and local actions, Federal actions, and initiatives by private organizations and individuals.~~

~~(c) There is authorized to be appropriated $1,000,000 to carry out the provisions of this section, which sum shall be available until expended.~~

***SECTION 1. SHORT TITLE.***

*This Act may be cited as the "Emergency Wetlands Resources Act of 1983".*

***SEC. 2. FINDINGS AND PURPOSE.***

*(a) FINDINGS.—The Congress finds that—*

*(1) wetlands play an integral role in maintaining the quality of life through material contributions to our national economy, food supply, water supply and quality, flood control, and fish, wildlife, and plant resources, and thus to the health, safety, recreation, and economic well-being of all our citizens;*

*(2) wetlands provide habitat essential for the breeding, spawning, nesting, migration, wintering, and ultimate survival of a major portion of the Nation's migratory and resident fish and wildlife, including migratory birds, endangered species, commercially and recreationally important finfish, shellfish, and other aquatic organisms, and contain many unique species and communities of wild plants;*

*(3) our Nation's migratory bird treaty obligations with Canada, Mexico, Japan, the Union of Soviet Socialist Republics, and under the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere, require Federal protection of wetlands used by migratory birds for breeding, wintering or migration, and are needed to achieve and to maintain optimum population levels, distributions, and patterns of migration;*

*(4) wetlands, and the fish, wildlife, and plants dependent thereon, provide significant recreational and commercial benefits, including—*

*(A) contributions to a commercial marine harvest valued at over $10,000,000,000 annually,*

*(B) support for a major portion of the Nation's multi-million-dollar annual fur and hide harvest, and*

*(C) fishing, hunting, birdwatching, nature observation, and other wetland-related recreational activities that generate billions of dollars annually;*

*(5) wetlands enhance the Nation's water quality and supply by serving as groundwater recharge areas, sediment and nutrient traps and chemical sinks;*

*(6) wetlands provide a natural means of flood and erosion control by retaining water during periods of high runoff, thereby protecting against loss of life and property;*

*(7) wetlands constitute only a small percentage of the land area of the United States, are estimated to have been reduced by half in the contiguous States since the founding of our Nation, and continue to disappear by hundreds of thousands of acres each year;*

*(8) certain activities of the Federal Government have inappropriately altered or assisted in the alteration of wetlands, thereby unnecessarily stimulating and accelerating the loss of these valuable resources and the environmental and economic benefits that they provide; and*

*(9) the existing Federal, State, and private cooperation in wetlands conservation should be strengthened in order to minimize further losses of these valuable*

areas and to assure their management in the public interest for this and future generations.

(b) PURPOSE.—It is the purpose of this Act to promote, in concert with other Federal and State statutes and programs, the conservation of our Nation's wetlands in order to maintain the public benefits they provide and to fulfill international obligations contained in various migratory bird treaties and conventions with Canada, Mexico, Japan, the Union of Soviet Socialist Republics, and with various countries in the Western Hemisphere by—

(1) intensifying cooperative efforts among private interests and local, State, and Federal governments for the management and conservation of wetlands; and

(2) intensifying efforts to protect the Nation's wetlands through acquisition in fee, easements, or other interests and methods by local, State, and Federal governments and the private sector.

## TITLE I—REVENUES FOR MIGRATORY BIRD CONSERVATION FUND

### SEC. 101. ADMISSION FEES AT CERTAIN NATIONAL WILDLIFE REFUGE UNITS.

(a) DEFINITIONS.—As used in this section—

(1) The term "admission permit" means a single visit permit provided for in subsection (c)(1)(A) or a group visit permit provided for in subsection (c)(1)(B).

*(2) The term "designated unit" means any unit of the National Wildlife Refuge System that the Secretary designates, for purposes of this section, as a unit for which admission permits are required of the public for entry thereto.*

*(3) The term "duck stamp" means a migratory bird hunting and conservation stamp issued under section 2 of the Act of March 16, 1934 (commonly known as the "Duck Stamp Act", 16 U.S.C 718b).*

*(4) The term "related individuals" means, with respect to an individual holding a valid single visit admission permit issued under subsection (c)(1) or an unexpired duck stamp—*

*(A) all other individuals accompanying such individual in a single, private, noncommercial vehicle at the time of entry into a designated unit; or*

*(B) if entry into a designated unit is made other than by such a vehicle, the spouse, any child, and any parent accompanying such individual at the time of entry.*

*(5) The term "Secretary" means the Secretary of the Interior.*

*(b) IN GENERAL.—(1) Notwithstanding the provisions of the Land and Water Conservation Fund Act of 1965 (16*

*U.S.C. 460l–4 et seq.), the Secretary shall charge reasonable fees for admission permits to designated units and shall pay the revenues accruing from the collection of such fees, less 10 per centum thereof which shall be used by the Secretary—*

*(A) to defray the administrative costs incurred in issuing such permits, and*

*(B) to carry out the purposes for which the respective designated units were established,*

*into the migratory bird conservation fund established under section 4 of the Act of March 16, 1934 (16 U.S.C. 718d).*

*(2) Notices that admission permits issued under this section are required for entry shall be prominently posted at each designated unit and, to the extent practicable, included in appropriate publications of the Department of the Interior.*

*(c) ADMISSION PERMITS.—(1) The Secretary shall have available for sale, and issue upon payment of the required fee, at each designated unit, and at such other locations he deems appropriate, the following permits:*

*(A) INDIVIDUAL VISIT PERMITS.—An individual visit permit for a designated unit authorizes the purchaser thereof and the related individuals unlimited entries into, and exits from, such unit during such period of consecutive days (but not exceeding fifteen consecutive days) as the Secretary considers appropriate*

*taking into account the nature and size of, and other relevant factors pertaining to, the unit.*

*(B) GROUP VISIT PERMITS.—A group visit permit authorizes a group of individuals to make such number of entries into, and exists from, a designated unit within such period of time, and subject to such other terms and conditions, as may be established by the Secretary after taking into account the nature and size of, and other relevant factors pertaining to, the unit and the purposes for which the group visit is made.*

*(2) The fees charged by the Secretary for admission permits to each designated unit shall be fair and equitable, taking into consideration the direct and indirect cost to the Government, the benefits to the recipient, the public policy or interest served, the comparable fees charged by non-Federal public agencies, and the economic and administrative feasibility of fee collections and other pertinent factors.*

*(d) EXCEPTIONS.—(1) The Secretary may not require an admission permit, nor charge any fee, under this section with respect to the entry into—*

*(A) any designated unit by—*

*(i) any individual who has in his possession at the time of entry a valid duck stamp issued to him,*

*(ii) any individual who is a related individual to any individual described in clause (i), or*

*(iii) any individual who has been issued a special permit under subsection (e); or*

*(B) the Back Bay National Wildlife Refuge, during such time as it may be a designated unit, by any individual who has been issued a special permit under section 3 of Public Law 96–315 for that refuge.*

*(2) The Secretary may not require an admission permit, nor charge any fee, under this section with respect to travel by private, noncommercial vehicle over any national parkway or any road or highway established as a part of the Federal-aid highway system described in section 103 of title 23, United States Code, which is commonly used by the public as a means of travel between two places either or both of which are outside a designated unit.*

*(e) SPECIAL PERMITS.—(1) Upon application therefor, the Secretary shall issue to any individual who is a citizen of the United States, or is domiciled in the United States, and who—*

*(A) has been medically determined to be blind or permanently disabled for purposes of receiving benefits under any other Federal law; or*

*(B) at the time of such application is age 62 or older;*

*a special permit which entitles the individual, during his or her lifetime, to free entry into all designated units.*

*(2) Upon application therefor, the Secretary shall issue to any individual a special permit which entitles the individual, during such period as may be appropriate, to free entry to a designated unit for purposes of travel to an inholding within the unit.*

*(3) Upon application therefor, the Secretary may issue to any individual a special permit which entitles the individual, during such period as may be appropriate, to free entry to a designated unit for any nonrecreational purpose considered appropriate by the Secretary.*

*(4) The Secretary shall issue special permits under this subsection without charge.*

*(f) PERMIT CONDITIONS.—An admission permit or special permit issued under this section—*

*(1) is valid only with respect to the individual or group to whom it is issued; and*

*(2) does not authorize such individual or group to engage in any use for which a fee is charged under the Land and Water Conservation Fund Act of 1965.*

*(g) REGULATIONS.—The Secretary shall issue such regulations as are necessary or appropriate to carry out this section.*

*(h) REPORTS.—The Secretary shall submit to the Committee on Merchant Marine and Fisheries of the House of Representatives and the Committee on Environment and Public Works of the Senate no later than March 31 of each year a report on the administration of this section during the period covered by the report including, but not limited to, a list of current designated units, a list of units, if any, being considered for designated status, designated unit capacity and visitation data, the amount and disposition of the fees collected under this section, such other information as the Secretary deems appropriate, and any recommendations the Secretary may have for improving the operation of the admission permit program.*

***SEC. 102. PRICE OF MIGRATORY BIRD HUNTING AND CONSERVATION STAMPS.***

*Section 2(b) of the Act of March 16, 1934 (48 Stat. 451; 16 U.S.C. 718b) is amended by striking out "$7.50" and inserting in lieu thereof "$10", and by striking out "any hunting year" and inserting in lieu thereof "hunting years 1984 and 1985, $12.50 for hunting years 1986 and 1987, and $15 for each hunting year thereafter,".*

## *TITLE II—FEDERAL AND STATE WETLANDS CONSERVATION*

***SEC. 201. DEFINITIONS.***

*For purposes of this title—*

*(1) The term "effective period" means the period beginning on October 1, 1984, and ending on the close of September 30, 1994.*

*(2) The term "eligible State" means, with respect to any fiscal year, a State that is eligible under section 204 for payment of moneys under an apportionment made under section 203(b) for that year.*

*(3) The term "enhancement project" means a project (which may include, but is not limited to, construction, fresh-water flow control, or the introduction of appropriate flora) that will establish (other than by acquisition) a wetland, increase the size (other than by acquisition) of an existing wetland, or restore the natural quality of an existing wetland.*

*(4) The term "fund" means the Wetlands Conservation Fund established under section 208.*

*(5) The term "preservation project" means a project (which may include, but is not limited to, construction, fresh-water flow control, or the introduction of appropriate flora) that will minimize or prevent the loss of an identified area of a wetland.*

*(6) The term "Secretary" means the Secretary of the Interior.*

*(7) The term "State" means any of the several States, the District of Columbia, and the Common-*

*wealth of Puerto Rico and, to the extent practicable may include the Virgin Islands, Guam, American Samoa, the Trust Territory of the Pacific Islands, and the Commonwealth of the Northern Mariana Islands.*

*(8) The term "wetland" means land that is—*

*(A) transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water; and*

*(B) generally inundated or saturated by surface or ground water frequently enough, and for long enough duration, to support plant populations or animal populations, or both, which are adapted to the limiting stresses of the environment characterized by saturated soil conditions or conditions of occasional flooding;*

*and includes, but is not limited to, a tidal or inland marsh, swamp, small pond, pothole, bog, ox bow, pocosin, slough, mudflat, or bottom land hardwood forest.*

*(9) The term "wetlands acquisition" means the obtaining of a property interest in a wetland or associated area by purchase or lease if the obtaining of such interest contributes appreciably to the long-term preservation of the wetland and the associated populations of fish, wildlife, and plants.*

*(10) The term "wetland conservation project" means a wetlands acquisition, a preservation project, or an enhancement project.*

***SEC. 202. NATIONAL WETLANDS PRIORITY CONSERVATION PLAN.***

*The Secretary, after consultation with the States, shall establish, and periodically review and revise, a national wetlands priority conservation plan which shall specify, on a region-by-region or other basis deemed appropriate by the Secretary, the types of wetlands to which priority should be given with respect to wetlands acquisition and the implementation of preservation projects and enhancement projects. In establishing such priorities, the Secretary shall take into account—*

*(1) the significance of the loss or threat of loss of the respective types of wetlands; and*

*(2) the contributions which the respective types of wetlands make to—*

*(A) wildlife, including endangered and threatened species, migratory birds, and resident species,*

*(B) commercial and sport fisheries, and*

*(C) surface and groundwater quality and quantity, and flood control.*

*SEC. 203. ALLOCATION AND APPORTIONMENT OF AMOUNTS AVAILABLE TO CARRY OUT THIS TITLE.*

*(a) Of the sum appropriated for any fiscal year under section 209—*

*(1) such percentage of that sum (but not more than 66⅔ per centum thereof) as is considered appropriate by the Secretary, less such amount (but not more than 4 per centum of such percentage) considered necessary by the Secretary to defray the costs of administering sections 202 through 207 during such fiscal year, shall be apportioned by him among eligible States in accordance with subsection (b); and*

*(2) the remainder of such sum after paragraph (1) is applied shall be retained by the Secretary for expenditure by him to carry out Federal wetlands acquisitions that are consistent with the wetlands priority conservation plan established under section 202.*

*Each wetland acquired by the Secretary under paragraph (2) shall be included within the National Wildlife Refuge System.*

*(b) The moneys allocated under subsection (a)(1) for any fiscal year during the effective period shall be apportioned by the Secretary among the eligible States as follows:*

*(1) 50 per centum thereof shall be apportioned on the basis of the ratio, as determined by the Secretary, which each eligible State's expenditure of funds (other*

*than Federal funds) for wetlands conservation projects in that State bears to the total amount of funds (other than Federal funds) expended by all eligible States for wetlands conservation projects in such States in that year. As used in this paragraph, the term "year" means the most recent year for which the calculation of such funds, for purposes of this paragraph, is practicable.*

*(2) 50 per centum thereof shall be apportioned to eligible States consistent with the national wetlands priority conservation plan established under section 202.*

*Apportionments made under this subsection shall be adjusted so that no eligible State is apportioned less than one-half of 1 per centum of the total amount available for apportionment under this subsection in any fiscal year.*

***SEC. 204. ELIGIBILITY OF STATES FOR PAYMENT UNDER APPORTIONMENTS.***

*(a) A State is eligible for payment of moneys under an apportionment made under section 203(b) if—*

*(1) the Secretary determines that a wetlands conservation plan submitted to him by the State—*

*(A) is comprehensive and will ensure the perpetuation of wetland resources,*

*(B) was prepared with opportunity for public comment,*

*(C) is substantial in character and design, and*

*(D) is in a format required by the Secretary which shall be compatible with standards and formats required of States for grants administered by the Secretary, particularly the Federal Aid in Wildlife Restoration Act (16 U.S.C. 669 et seq.), Federal Aid in Sport Fish Restoration Act (16 U.S.C. 777 et seq.), and Fish and Wildlife Conservation Act of 1980 (16 U.S.C. 2901 et seq.); or*

*(2) the Secretary determines, after opportunity for public comment, that a wetland conservation project submitted to him by the State is substantial in character and design and meets such standards as the Secretary deems appropriate, and the State submits to the Secretary such surveys, plans, estimates, and other specifications for the project as the Secretary may require.*

*A comprehensive wetlands conservation plan or an individual wetland conservation project with respect to which such a determination is made under paragraph (1) or (2) is an approved plan or approved project for purposes of section 205.*

*SEC. 205. CONDITIONS RELATING TO APPORTIONMENTS.*

*(a) The moneys apportioned to an eligible State under section 203(b) may be used for the payment of not to exceed 75 per centum of the costs of (1) any segment of an approved plan, or (2) an approved project, as the case may be.*

*(b) No payment of any money apportioned under section 203(b) may be made by the Secretary with respect to any approved plan or any approved project unless—*

*(1) an agreement on the part of the eligible State setting forth its undertakings to implement the plan or project is submitted to, and approved by, the Secretary; and*

*(2) the Secretary finds that the approved plan segment or approved project has been completed, or is being undertaken, in compliance with such plan or project.*

*If the conditions in paragraphs (1) and (2) are met, the Secretary shall cause payment to be made to the proper authority of such State.*

*(c) The Secretary may from time to time make payments on an approved plan segment or approved project as it progresses, but such payments, including previous payments, if any, shall not be more than the United States pro rata share of the segment or project in conformity with the plan or project specifications.*

*(d) The Secretary may enter into agreements to fund an initial portion of an approved plan segment or approved project and to agree to fund the remaining costs from subsequent apportionments if and when they become available. The liability of the United States under such an agreement is contingent upon the continued availability of funds for the purposes of this section.*

*(e) Moneys paid to an eligible State under this section shall be applied only to approved plans or approved projects and, if otherwise applied, shall be repaid by the State before it may participate in any further apportionment under this title.*

***SEC. 206. TREATMENT OF UNOBLIGATED AMOUNTS.***

*(a) The amount of any apportionment made to an eligible State under section 203(b) for any fiscal year that remains unobligated at the close thereof shall continue to be available to that State for obligation until the close of the succeeding fiscal year.*

*(b) If any amount to which subsection (a) applies remains unobligated at the close of the two-fiscal year period referred to in that subsection, such amount shall be used by the Secretary in accordance with subsection (c).*

*(c) During the fiscal year after any two-fiscal year period referred to in subsection (b), the Secretary shall make available—*

*(1) any, all, or none (as he deems appropriate) of the aggregate of all of the amounts unobligated by eligible States at the close of such period to those eligible States not having unobligated amounts at the close of such period for expenditure to implement wetland conservative projects that are consistent with the national wetlands priority conservative plan established under section 202; and*

*(2) if all of such aggregate is not made available to eligible States under paragraph (1), the balance of such aggregate for expenditure under section 203(a)(2), which balance shall remain available until expended. Any part of any amount made available under paragraph (1) for any fiscal year that remains unobligated at the close of such year shall be available, until expended, for expenditure under section 203(a)(2).*

***SEC. 207. REGULATIONS.***

*The Secretary shall issue such regulations as are necessary or appropriate to carry out this title.*

***SEC. 208. WETLANDS CONSERVATIVE FUND.***

*(a) There is established in the Treasury of the United States a fund to be known as the Wetlands Conservative Fund consisting of the amounts that are transferred to it under subsection (c).*

*(b) Amounts in the fund shall be available, as provided by appropriation Acts, only for making expenditures to carry out this title.*

*(c) For each fiscal year within the effective period, there are transferred $75,000,000 to the fund from the land and water conservation fund established under section 2 of the Land and Water Conservation Fund Act of 1965 (16 U.S.C. 460l–5).*

***SEC. 209. AUTHORIZATION OF APPROPRIATIONS.***

*For each fiscal year within the effective period, there are authorized to be appropriated from the fund to the Department of the Interior $75,000,000 to carry out this title.*

***SEC. 210. CONFORMING AMENDMENT.***

*Section 2(c)(1) of the Land and Water Conservation Fund Act of 1965 (16 U.S.C. 460l–5(c)(1)) is amended by inserting immediately before "September 30, 1989." the following: "September 30, 1984, and $975,000,000 for fiscal year 1985 and each fiscal year thereafter through".*

## *TITLE III—WETLANDS INVENTORY AND TREND ANALYSIS AND MISCELLANEOUS PROVISIONS*

***SEC. 301. CONTINUATION OF NATIONAL WETLANDS INVENTORY PROJECT.***

*(a) IN GENERAL.—The Secretary, acting through the Director of the United States Fish and Wildlife Service,*

*shall continue the National Wetlands Inventory project and shall—*

*(1) produce, by September 30, 1987, National Wetlands Inventory maps for the areas that have been identified by the Service as top priorities for mapping, including the entire coastal zone of the United States, floodplains of major rivers, and the Prairie Pothole region;*

*(2) produce, by September 30, 1989, National Wetlands Inventory maps for those portions of the contiguous United States for which maps have not been produced earlier;*

*(3) produce, as soon as practicable, National Wetlands Inventory maps for Alaska and other noncontiguous portions of the United States; and*

*(4) produce, by September 30, 1985, and at ten-year intervals thereafter, reports to update and improve the information contained in the report dated September 1982 and entitled "Status and Trends of Wetlands and Deepwater Habitat in the Coterminous United States, 1950's to 1970's".*

*(b) NOTICE.—The Secretary shall notify the appropriate State and Local units of government at such time as he proposes to begin map preparation under subsection (a) in an area. Such notice shall include, but is not limited to, an iden-*

*tification of the area to be mapped, the proposed schedule for completion, and the identification of a source for further information.*

*(c) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Department of the Interior the following sums, to remain available until expended:*

*(1) $14,500,000 for each of the fiscal years occurring in the period beginning on October 1, 1984, and ending at the close of September 30, 1987, to carry out subsection (a)(1).*

*(2) $6,750,000 for each of the fiscal years occurring in the period beginning on October 1, 1987, and ending at the close of September 30, 1994, to carry out subsection (a) (2) and (3).*

*(3) $900,000 for each of the fiscal years occurring in the period beginning on October 1, 1984, and ending at the close of September 30, 1996, to carry out subsection (a)(4).*

***SEC. 302. WETLANDS LOSS REPORT TO CONGRESS.***

*(a) IN GENERAL.—The Secretary shall, by September 30, 1985, prepare and submit to the Committee on Merchant Marine and Fisheries of the House of Representatives and the Committee on Environment and Public Works of the Senate a report regarding wetlands losses in the United States.*

*(b) REPORT CONTENTS.—The report required under subsection (a) shall contain—*

*(1) an analysis of the causes of wetlands destruction and degradation;*

*(2) a compilation and analysis of Federal statutory and regulatory mechanisms, including expenditures and financial assistance, which induce wetlands destruction or degradation;*

*(3) a compilation and analysis of Federal expenditures resulting from wetlands destruction and degradation;*

*(4) an analysis of the environmental and economic impacts (including, but not limited to, the impact on property values and local economic impacts) of eliminating or restricting future Federal expenditures and financial assistance, whether direct or indirect, which have the effect of encouraging the destruction or degradation of wetlands, including but not limited to: public works expenditures; assistance programs such as price-support programs, commodity loans and purchase programs, and disaster assistance progams; soil conservation programs; and certain income tax provisions;*

*(5) an analysis of the environmental and fiscal impact of failure to restrict future Federal expenditures and financial assistance which have the effect of en-*

*couraging the destruction or degradation of wetlands, including but not limited to: assistance for normal silviculture activity (such as plowing, seeding, planting, cultivating, minor drainage, or harvesting for the production of fiber or forest products); Federal expenditures required incident to studies, evaluations, design, construction, operation, maintenance, or rehabilitation of Federal water resource development activities, including channel improvements; the commodity loans and purchases program, and cotton, feed grain, wheat, and rice production stabilization programs administered by the Department of Agriculture; Federal expenditures for the construction of publicly owned or publicly operated highways, roads, structures, or facilities that are essential links in a larger network or system; and general revenue-sharing grants made under section 102 of the State and Local Fiscal Assistance Amendments of 1972 (31 U.S.C. 1221); and*

*(6) recommendations for the conservation of wetlands resources based on an evaluation and comparison of all management alternatives, and combinations thereof, such as State and local actions, Federal actions, and initiatives by private organizations and individuals.*

*(c) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated $1,000,000 to carry out the provisions of this section, which sum shall be available until expended.*

***SEC. 303. WETLANDS LOAN ACT.***

*Section 3 of the Wetlands Loan Act (16 U.S.C. 715k–5) is amended by striking out the first three sentences thereof.*

***SEC. 304. MIGRATORY WATERFOWL AREA ACQUISITION.***

*Section 7(a)(1) of the Land and Water Conservation Fund Act of 1965 (16 U.S.C. 460l–9(a)(1)) is amended by striking out "except migratory waterfowl areas which are authorized to be acquired by the Migratory Bird Conservation Act of 1929, as amended".*

## *TITLE IV—PROVISIONS AFFECTING FEDERAL LANDS AT MANTEO BAY, NORTH CAROLINA*

***SEC. 401. MANTEO BAY PROJECT.***

*(a) USE OF CERTAIN FEDERAL LANDS.—Notwithstanding any other provision of law, the Secretary of the Army, acting through the Chief of Engineers, is authorized to use land within the boundaries of the Cape Hatteras National Seashore and land within the boundaries of the Pea Island National Wildlife Refuge which he determines to be necessary to carry out the project at Manteo (Shallowbag) Bay, North Carolina, authorized by section 101 of the River and Harbor Act of 1970.*

*(b) EFFECTS OF USE.—In implementing the authority under subsection (a), the Secretary of the Army, in consultation with the Secretary of the Interior, shall, to the extent practicable and consistent with the construction and continued operation of the Manteo Bay project, carry out the project in such manner as to (1) maintain the essential integrity of the Pea Island National Wildlife Refuge and the Cape Hatteras National Seashore; and (2) ensure that adverse impacts to the uses and purposes of the Pea Island National Wildlife Refuge and the Cape Hatteras National Seashore are avoided, if possible, or minimized, and that, if the Secretary of the Army finds appropriate, unavoidable adverse impacts are mitigated.*

# THE EMERGENCY WETLANDS RESOURCES ACT OF 1983 (WITH SPECIFIC REFERENCE TO THE PROVISION RELATING TO THE OREGON INLET PROJECT IN NORTH CAROLINA)

---

TUESDAY, FEBRUARY 7, 1984

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON WATER RESOURCES,
COMMITTEE ON PUBLIC WORKS AND TRANSPORTATION,
*Washington, D.C.*

The subcommittee met at 10:05 a.m., in room 2253, Rayburn House Office Building, Hon. Robert A. Roe (chairman of the subcommittee) presiding.

Mr. ROE. The hearing will come to order. Good morning, ladies and gentlemen.

This morning the Subcommittee on Water Resources meets to receive testimony on H.R. 3082, the Emergency Wetlands Resources Act, with particular reference to title IV of the bill which concerns the navigation project for Manteo—is that the correct pronunciation, Shallowbag?

Mr. JONES. That is one and the same.

Mr. ROE. It sounds like something from New Jersey.

Mr. JONES. I am glad to hear that.

Mr. ROE. Shallowbag, N.C. We have a city called Snow Pile in my State.

This project was authorized by the River and Harbor Act of 1970. The project includes maintenance of a channel through Oregon Inlet which is the northernmost inlet through the Barrier Beaches, and is used for access by commercial fishermen in the area. It includes construction of jetties on either side of the inlet on lands of the Cape Hatteras National Seashore and Pea Island National Wildlife Refuge in order to control sedimentation which blocks the inlet.

The original environmental impact statement was filed in April 1979. A final supplement was filed in November 1980 and a second supplement is currently being prepared.

The Department of the Interior has declined to grant the Corps of Engineers the necessary permission to construct the jetties on its property on the grounds that the jetties would interfere with the natural southerly drift of the Barrier Beaches and cause erosion. Title IV of H.R. 3082 would expressly authorize the Corps of Engineers to use lands within the seashore and wildlife refuge necessary for construction of the project.



33-653 O—84——4

Our first witness this morning is the Honorable Walter B. Jones, the most distinguished chairman on Merchant Marine and Fisheries Committee. But before we hear from you, I yield to the ranking minority member, Mr. Stangeland, for any comments he may wish to make.

Mr. STANGELAND. Thank you, Mr. Chairman.

Today we will hear testimony concerning the Emergency Wetlands Act which was reported by the Merchant Marine and Fisheries Committee on September 22 of last year.

During markup of this legislation, the Merchant Marine Committee added the text of H.R. 3288, which deals with a Corps of Engineers project at Manteo Bay, N.C., commonly known as Oregon Inlet. The committee request for referral of this bill was granted for items within our jurisdiction.

The legislation would allow the Corps of Engineers to attach stone jetties to land from the Cape Hatteras National Seashore and the Pea Island National Wildlife Refuge, as well as build a sand bypass system on Cape Hatteras National Seashore land.

I am aware of both the strong support for and strong opposition to this legislation, and look forward to hearing from the witnesses about the information leading to their views. We also hope to learn more on the facts of the situation from the Corps of Engineers and the Department of the Interior, and I join the chairman in welcoming you to our subcommittee this morning, and certainly welcoming our honorable colleague, Mr. Jones.

Mr. ROE. Now, we want to welcome you, Mr. Chairman, to our committee, and we have your testimony. I know you want to present it in full. We try to outline the case as we understand it and, of course, the purpose today is to hear different witnesses that are vitally interested in this issue. So I know of your strong efforts and all the work that you have put in as the chairman of the Merchant Marine and Fisheries Committee.

Mr. Jones, the full text of your prepared statement will appear in the record at this point.

[Statement referred to follows:]

STATEMENT OF THE HON. WALTER B. JONES, CHAIRMAN, COMMITTEE ON MERCHANT MARINE AND FISHERIES

Mr. Chairman, I would like to thank you for allowing me the opportunity to testify before the Subcommittee on Water Resources regarding Title IV of H.R. 3082, legislation which would authorize the Secretary of the Army to use certain lands in connection with the Manteo (Shallowbag) Bay Navigation Project in North Carolina, commonly called the Oregon Inlet Project.

Specifically, this title is designed to allow the Army Corps of Engineers to use the necessary land, estimated by the Corps to be approximately 150 acres, from the Cape Hatteras National Seashores and the Pea Island National Wildlife Refuge, which consists of approximately 34,000 acres.

Oregon Inlet is located on the Outer Banks of North Carolina in Dare County with Cape Hatteras National Seashore to the immediate north and the Pea Island National Wildlife Refuge to the immediate south. On the last page of my prepared testimony is a map of the North Carolina Outer Banks so each of you can familiarize yourself with the area. As the map shows, Oregon Inlet offers the only outlet to the Atlantic Ocean across a 120-mile span of the Outer Banks stretching from the Virginia border to the end of Hatteras Island.

The first attempt to stabilize the inlet occurred in 1950. Congress authorized a navigation channel through Oregon Inlet which would be maintained by dredging a depth of 14 feet with a bottom width of 400 feet. However, the 400-foot bottom width has never been attained over the entire channel.

Since I came to Congress in 1966, I have worked long and hard to get a stabilized channel at Oregon Inlet for twelve months out of the year. The first step was completed in the 91st Congress when the project was authorized in the Rivers and Harbors Act of 1970 with an approximate cost of $16.5 million dollars. Since that time the project has been studied intensely by the Corps. The Army Corps of Engineers has published an environmental impact statement, a general design memorandum, a general design memorandum revision, a post authorization change report, and, in January 1983, they published a feasibility study dredging/nearshore disposal plan for Oregon Inlet. Now, 14 years later, after a series of delays and studies, the project, which has been modified by the Corps, is now estimated to cost $94.5 million. This price tag is high, but it must be measured against the value of human life.

The United States Coast Guard testified before my committee regarding the grave situation it faces. The Coast Guard stated that its station at Oregon Inlet handles approximately 300 cases per year, of which appropriately 60 are in the Inlet itself. Because of the shallow channel from the Coast Guard station to the Inlet, in late 1982, the Coast Guard found it necessary to move its own 82-foot boat from its Oregon Inlet Station down to Ocracoke Inlet, some 60 miles away, and subsequently to Wanchese Harbor, where it is currently docked. As of January 16th of this year, the 44-foot motor lifeboat and the 41-foot utility boat normally docked at this coast guard station have had to be moved to the Oregon Inlet Marina because the channel to the coast guard station has shoaled again. These boats are delayed some thirty minutes to an hour by their very locations when answering search and rescue calls in the Atlantic Ocean. The closest coast guard station to the north is Little Creek, Virginia, which is about 150 miles away. The closest station to the south is located at Hatteras Inlet, which is 52 miles away. By allowing this treacherous situation to continue, we are jeopardizing many lives that would not otherwise be in peril and forcing the coast guard to operate their search and rescue operations with a large handicap.

Several opponents of Title IV have stated that dredging the channel is a practical alternative. The Army Corps of Engineers testified before my committee that to maintain partial access through the Inlet they spent $1.1 million in fiscal year 1981, $1.8 million in fiscal year 1982, and $2.2 million as of August 3, 1983, for that fiscal year. I would like to point out that these figures reflect a dredging effort with sidecaster dredges.

From September 2 until December 31, 1983, a Hopper Dredge was under contract by the Corps of Engineers at Oregon Inlet. The contract was over on December 1, 1983; however, the work was not completed. This Hopper Dredge operated approximately 48 percent of the time with a down time of 52 percent due to bad weather conditions and repairs. In November, 1983, a sidecaster was transferred to Oregon Inlet by the Corps to dredge by the coast guard channel and other places where the hopper could not go. When the contract expired, I asked the Corps to extend the contract through the end of the year in order to get the channel navigable in time for the commercial fishing season—which I am happy to add, the Corps could and did do. When the Hopper Dredge left Oregon Inlet, the inlet was in extremely good condition. However, it is by understanding that, within a month's time, some 60 to 80 feet of bottom width has been lost as well as some 2 to 3 feet of depth. Now, having that Hopper Dredge at Oregon Inlet for four months cost the government some $2.5 to $3 million. Still, we are not guaranteed a safe navigable channel 12 months of the year. Obviously, dredging alone is neither a practical nor an acceptable alternative.

Prime Commercial fishing occurs in this area in the winter months; However, this is the same time when the most severe storms hit the Outer Banks, placing these fisherman in great peril. Many have moved their vessels from their homeport of Wanchese because of the declining situation of Oregon Inlet. This has caused major economic problems for this area in general and the Wanchese Seafood Industrial Park in particular. If vessels are unable to unload their catch or take on additional supplies, the area will lose a major source of jobs and income.

At Wanchese, which you can see from the map is about six miles from Oregon Inlet, the State of North Carolina, in cooperation with Federal agencies, has developed a modern commercial seafood industrial complex to accommodate large-scale seafood handling and processing operations. Because of the uncertain conditions at Oregon Inlet, the seafood park will go out of business.

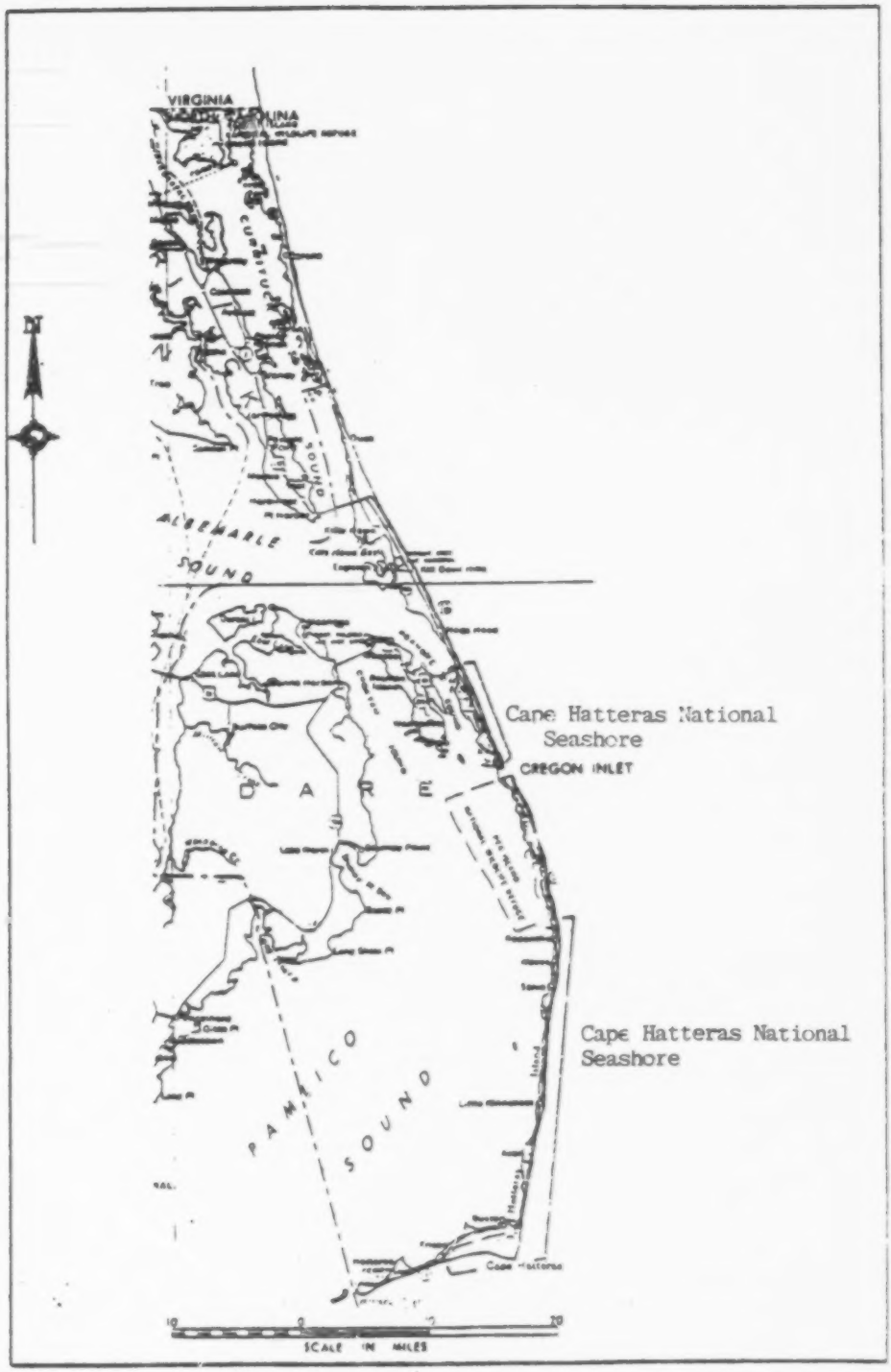
My point is this: The lack of a safe, navigable channel 12 months out the year threatens the very survival of the commercial fishing industry in this area. If the fisherman try to traverse the inlet and get into trouble, the Coast Guard's search and rescue efforts, where a few minutes can mean the difference between life and

death, are severely hampered by delays due to shoaling. This situation cannot continue to exist.

Let me emphasize that the Manteo (Shallowbag) Bay Project has been authorized by Congress since 1970. The bill today seeks to reaffirm that authorization by clearing a legal impediment which no one expected.

I strongly support H.R. 3082, as unanimously reported by the Merchant Marine and Fisheries Committee, which I chair, and I urge this committee to report Title IV of this bill favorably.

Thank you again for this opportunity to testify.


VIRGINIA
NORTH CAROLINA
N
ALBEMARLE SOUND
Cape Hatteras National Seashore
OREGON INLET
D A R E
PAMLICO SOUND
Cape Hatteras National Seashore
Cape Hatteras
SCALE IN MILES

Mr. ROE. Please proceed.

## TESTIMONY OF HON. WALTER B. JONES, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NORTH CAROLINA

Mr. JONES. Mr. Chairman, thank you very much. I would like to thank you for allowing me the opportunity to testify before the Subcommittee on Water Resources regarding title IV of H.R. 3082, legislation which would authorize the Secretary of the Army to use certain lands in connection with the Manteo (Shallowbag) Bay navigation project in North Carolina, commonly called the Oregon Inlet project.

Specifically, this title is designed to allow the Army Corps of Engineers to use the necessary land, estimated by the corps to be approximately 150 acres. Bear in mind the two projects for which it would be taken has 34,000 acres. So it is no great land grab whatsoever.

Mr. Chairman, you have my formal statement for the record. So, I will make a few informal remarks at this point.

Mr. Chairman, just sitting down right across the desk, let me explain what this is all about.

The Oregon Inlet jetties have been around for a long time authorized by this committee, as you already mentioned, in 1970, and we were trying to make some progress in reaching a point where the jetties would be implemented and put in. The Corps of Engineers have repeatedly supported the idea of the jetties. We are now spending about two to two and half, sometimes $3 million a year in dredging with no satisfaction. For example, in 1983, the dredging was, I think, conducted between 9 or 10 months of the past year. Already all the dredging which was done has shown to offer no permanent relief. The dredging, in spite of what people insist, is not the answer. It has been proven it will not work. There is no permanent relief in dredging. So there is a constant carry on.

But with all the dredging that is done, usually about 3 out of 4 years there comes a point in time during the heavy fishing season where the Oregon Inlet is not usable. You cannot go or come. And it is involved in some deaths, it is involved in much property loss and certainly economic loss to the commercial fisheries. That is not alone the problem.

Bear in mind, gentlemen, that from 120 miles, give or take a few, of the coast, land coastline, there is no haven whatsoever except the Oregon jetty project in it. And so we must bear that in mind. We are not confining this strictly to the commercial fishermen. We are talking about other freight carriers who, in the tumultuous seas down in that particular area, Cape Hatteras and whatnot, they have nowhere to go in the town of stone and strife. And so we must bear that in mind. I do not know how you get that in the cost-benefit ratio. But to me it is very real.

Some of those boats have been lost because of a lack of a place to seek shelter in the tumultuous seas, of which they are famous for their reputation known as the Graveyard of the Atlantic.

So we come to the point of a situation where the problem we are trying to address apparently did not exist when this project was authorized in 1970. But it has arisen with the Department of Interior

taking one position, the corps taking another position, and so all this bill does is that when the jetties are ready to be put in place, that the land base will be available, whether that be 2 years from now, 5 years from now, who knows. It has to be funded. And until the project is funded, then this bill is a standby.

And so, with that, bear in mind it carries no authorization, it carries no appropriation, simply all we are doing is transferring 150 acres from one part of our Government to another.

That is all we are asking.

Mr. ROE. Let me ask you this, Mr. Chairman.

What is it, a matching fund with the Federal Government when forms of dredging are concerned?

Mr. JONES. No, sir. It is strictly a Federal project authorized by this committee.

Mr. ROE. And the annual dredging we are talking about, you mentioned that we spent recently is about $3 million to do the dredging. And as soon as it gets done, it fills in again. That is part of the problem?

Mr. JONES. That is part of the problem.

Mr. ROE. That comes pretty much every year?

Mr. JONES. That comes under the Corps of Engineers appropriations.

Mr. ROE. Do we have any background as to how long has it been going on? Is somebody from the corps going to testify here?

All right. We save that question for them.

So basically what we are saying is that this is an inlet that is now used for commercial fishing boats and that in order to retain its vitality, it requires continuous dredging. Back in 1970, Congress authorized construction of the jetties and now we have a confrontation between the corps, so as to speak, and the Department of Interior concerning the usable land that is necessary. Basically that is where we are going?

Mr. JONES. That is correct, sir.

Let me conclude, to those who are concerned about the 150 acres, the information that I have from the corps, whom I respect very highly, their expertise and knowledge, is this, that if we go with the jetties and allow them, if and when the jetties are built, to allow them to take this 150 acres, it is plus factor as far as the conservation is concerned. Because the figures that I have, that if we do nothing, and the status quo as we now have it, nothing is done. The inlet continues to wash ashore, the tides will change, we will in a matter of 10 years lose approximately—I do not have the figures written, I believe 185 acres compared to the 150 we are asking for. If we go into full-time dredging, which has been proven in the last 12 months not to be satisfactory, then in the period of 10 years, through that method, we would lose 200 acres. So with this legislation, even to those who are concerned about the erosion, we feel like that we are offering the best of all worlds.

Mr. Chairman, that concludes—I think most people are familiar with what we are talking about here, and you will be better informed during the day. And my formal statement is for the record, and I would be happy to try to answer any questions that anybody might have.

Mr. ROE. OK. I think I understand what the case is all about here.

Any further questions?

Now, our next witness ironically is the Department of the Army. So we will have Mr. Vallianos.

Now, you are not accompanied by anyone, Mr. Vallianos?

Mr. VALLIANOS. No, sir.

Mr. ROE. OK.

The Chair would recognize the distinguished representative, Mr. Vallianos, Chief, Coastal Engineering Branch, Wilmington District, Corps of Engineers.

**TESTIMONY OF LIMBERIOS VALLIANOS, CHIEF, COASTAL ENGINEERING BRANCH, WILMINGTON DISTRICT, CORPS OF ENGINEERS, DEPARTMENT OF THE ARMY**

Mr. VALLIANOS. Thank you, Mr. Chairman, members of the subcommittee.

I am Limberios Vallianos, Chief of the Coastal Engineering Branch for the Wilmington District, Corps of Engineers. I am pleased to appear today to discuss title IV of H.R. 3082, the proposed Emergency Wetlands Resources Act.

Title IV of H.R. 3082 would authorize the Secretary of the Army, acting through the Chief of Engineers, to use lands within the Cape Hatteras National Seashore and the Pea Island National Wildlife Refuge that are necessary for implementation of the project at Manteo [Shallowbag] Bay, N.C., often referred to as the Oregon Inlet project. This project was authorized by section 101 of the River and Harbor Act of 1970; but the Department of Interior cannot issue a permit for use of certain lands on the refuge because it has determined that the jetties would be incompatible with the purposes for which the refuge was established. Also, the Department of the Interior has determined that it has no authority to issue such a permit for the national seashore. Title IV of H.R. 3082 would provide authorization for use of these lands and would obviate the need for any permits from that Department.

Oregon Inlet is the northernmost entrance through the Barrier Islands which parallel much of the North Carolina coast. The Barrier Islands protect the coast and provide protected lagoons between them and the mainland shore. Communities and fishing industries, such as the one based in the village of Wanchese, were established early along these lagoons to take advantage of the protection. Since construction of a Federal project at Oregon Inlet with connecting channels through Pamlico Sound, as authorized in 1950, use of the channel for offshore fishery has expanded considerably.

In answer to your question, Congressman Roe, we have been maintaining the channel since its completion in 1961, in effect approximately 22 years or so of maintenance at that site.

Mr. ROE. Would you at this point put—let me interrupt you there.

Can you provide us for the record the total expenditures you have made since 1961?

Mr. VALLIANOS. I would be happy to.

[The following was received from Mr. Vallianos:]

OREGON INLET DREDGING HISTORY

| Fiscal year | Dredges | Volume removed cubic yards | Dredging cost, current price level |
|---|---|---|---|
| 1960 | Hyde | 62,991 (New work) | $192,000 |
| 1961 | do | 24,013 (New work) | 132,000 |
| 1962 | do | 109,186 (Maintenance) | 252,000 |
| 1963 | do | 76,868 (Maintenance) | 230,000 |
| 1964 | Hyde & Merritt | 20,600 (Maintenance) | 502,000 |
| 1965 | do | 283,546 (Maintenance) | 531,000 |
| 1966 | do | 184,733 (Maintenance) | 500,000 |
| 1967 | Hyde | 215,232 (Maintenance) | 216,000 |
| 1968 | Hyde & Merritt | 297,176 (Maintenance) | 1,143,000 |
| 1969 | do | 202,036 (Maintenance) | 1,337,000 |
| 1970 | Hyde, Merritt & Schweizer | 170,745 (Maintenance) | 986,000 |
| 1971 | Hyde | 132,149 (Maintenance) | 840,000 |
| 1972 | Hyde & Merritt | 434,355 (Maintenance) | 1,704,000 |
| 1973 | Merritt & Schweizer | 60,445 (Maintenance) | 381,000 |
| 1974 | do | 219,772 (Maintenance) | 929,000 |
| 1975 | Schweizer | 182,068 (Maintenance) | 257,000 |
| 1976 and TQ | do | 372,463 (Maintenance) | 1,081,000 |
| 1977 | do | 312,485 (Maintenance) | 945,000 |
| 1978 | Merritt & Schweizer | 358,127 (Maintenance) | 1,014,000 |
| 1979 | Schweizer | 415,000 (Maintenance) | 970,000 |
| 1980 | do | 438,000 (Maintenance) | 732,000 |
| 1981 | Schweizer, Merritt & Currituck | 693,080 (Maintenance) | 1,190,000 |
| 1982 | Schweizer, Merritt & Fry | 981,217 (Maintenance) | 1,876,000 |
| 1983 | Schweizer, Merritt, Fry & Mermentau | 1,034,416 (Maintenance) | 2,927,000 |
| 1984 | do | | [1] 4,561,000 |

[1] Projected.

Mr. ROE. Do you have any idea what it is?

Mr. VALLIANOS. Yes, sir, I can tell you that. Through fiscal year 1983, and that is from the beginning of maintenance in 1962 through fiscal year 1983, there has been an expenditure of $20,543,000, approximately $20.5 million.

Mr. ROE. Let me ask you this. Is that maintenance money or additional?

Mr. VALLIANOS. That is maintenance.

Mr. ROE. What did we do, what was the initial cost?

Mr. VALLIANOS. The new work between 1960 and 1961—and these are current dollars, sir, there was an expenditure of $324,000 to excavate the initial channel.

Mr. ROE. About $300,000?

Mr. VALLIANOS. Yes, sir.

Mr. ROE. So the maintenance has been considerably higher, to say the least?

Mr. VALLIANOS. Yes, sir.

I would like to direct some detail toward the results of that maintenance, if I might, later in the testimony.

Mr. ROE. Go ahead.

Mr. VALLIANOS. I would also like to include, in terms of maintenance expenditures, that in fiscal year 1984, the present fiscal year through its first quarter, December 31, we expended approximately $2 million and expect to expend another $2½ million through the next three quarters.

Mr. ROE. This is above and beyond the $20 million?

Mr. VALLIANOS. Yes, sir. So about another $4.5 million through fiscal year 1984.

Mr. ROE. So therefore we are talking roughly of an ongoing investment of somewhere in the order of $25 million?

Mr. VALLIANOS. Yes, sir.

Mr. ROE. Plus an initial expenditure of $300,000, thereabouts?

Mr. VALLIANOS. That is correct.

Mr. ROE. OK. The gentleman may proceed.

Mr. VALLIANOS. In 1950 Congress authorized a channel through Oregon Inlet at a depth of 14 feet and width of 400 feet, as well as associated navigation channels in Pamlico Sound to Wanchese and Manteo. That work was completed in 1961. However, due to the rough water conditions and the constant sand movement along the shore, it has been very difficult to maintain the authorized channel depth and width over the bar at the inlet on a year-round basis. Dredging in an attempt to maintain the 14-foot channel over the past 22 years has averaged about 327,000 cubic yards a year but, in the past 3 years, in an effort to provide a more dependable channel and one nearer to full project dimensions, the annual average has increased to 903,000 cubic yards. The problem of shoaling at the inlet is made worse by the fact that the position of the channel shifts rapidly, particularly during storms. The hazardous condition at the inlet and the dangerous weather conditions so often occurring in the area have led to many groundings in recent years, with loss of several boats, injuries to crews, and the loss of eight lives since 1969.

Mr. ROE. Can I interrupt you there?

What do we do with the material? Where did you put it?

Mr. VALLIANOS. Two modes of dredging have been employed or two methodologies have been employed at Oregon Inlet. One method is referred to as hopper dredging, that is the dredge accumulates the excavated sediments within its holds and deposits that material in deep water. That method was utilized initially in the new work of excavating Oregon Inlet in 1960–61 and was continued through about 1972. After that, relatively shallow conditions at the inlet dictated the use of what we refer to as side-cast dredges that have relatively shallow drafts. Those dredges simply pump up the material through a long pipe, approximately 100 feet in length and discharge it to the sides of the channel. That method has been used since about 1972. It was used also in combination with hopper dredging, I might add, before 1972. But from 1972 until 1983, side-cast dredging was solely used in the area. As many as three of these dredges have operated at one time, attempting to fight against the rapid shallowing in the Oregon Inlet.

Last year, because of some very difficult conditions in maintaining the channel through side-cast dredges, and fortunately through the development of deeper water through a central portion of the inlet, we were able to employ a combination again of side-cast dredges and a hopper dredge. That was last year, specifically during the last month of fiscal year 1983 and the first quarter of fiscal year 1984. We expect to use both a hopper dredge and side-cast dredges through the remaining part of this fiscal year.

Mr. ROE. Well, just again for clarification so that the committee understands the issue

At the present time, the bulk of the dredging has been done by side-cast dredging vessels?

Mr. VALLIANOS. In terms of time, I would say yes.

Mr. ROE. And the material that is being pumped out to sea, whatever amount, is being eked over to the side to the inland?

Mr. VALLIANOS. Yes, sir.

Mr. ROE. You may continue.

Mr. VALLIANOS. In 1970, Congress authorized project modifications consisting of one, stabilization of Oregon Inlet with two jetties, two, a system to transfer sand from one side of the inlet to the other, third, pier protection for the bridge over the inlet, four, deepening the inlet channel to 20 feet, five, a channel 14 feet to Wanchese, six, a 15-acre basin at Wanchese, and seven, a 10-foot channel from Manteo Bay to Croatan Sound. The sand bypass system, including the floating barrier breakwater component, has been designed as a necessary element of the jetty project in order to minimize erosion. Our studies indicate that this system will prevent the erosion which would otherwise be caused by the jetties. The jetty structures would require anchoring on and use of lands within the Cape Hatteras National Seashore and the Pea Island National Wildlife Refuge. In total, 90 acres of land would be required on a permanent basis to construct, operate and maintain the jetty structures. Additionally, permanent easements involving 50 acres of land would be needed for periodic use in providing beach corridors for sand bypassing. As mentioned previously, the Department of the Interior has indicated that it is unable to issue permits to allow the use of Park Service or Wildlife Refuge lands for this project because that Department has determined that the project would be incompatible with the purposes of the refuge and because it does not have the authority to allow such use of the national seashore.

Mr. ROE. Can I interrupt you there for clarification of the committee? I am quoting from your testimony: "Additionally, permanent easements involving 50 acres of land would be needed for periodic use in providing beach corridors for sand bypassing."

Could you explain what that means?

Mr. VALLIANOS. Yes, sir.

The corridors, Mr. Chairman, are simply imaginary corridors. They are strips of land down the beach, perhaps 60 feet in width, and along which pipeline would be laid on a periodic basis. The operation of sand bypassing consists of dredging either side of the jetties as required, but usually it will be from the north to the south, since the predominance of sand transported is from north to south, and the impoundment of sediment would be in most cases on the north side of the inlet. That material is dredged away into a pipeline that is submerged beneath the waters of the inlet, carried to the opposite side, and the pipeline extended for distances of 3 to 5 miles and sediment deposited in a low beach form.

Mr. ROE. What you are saying is that drifts north to south. That would be a buildup in that upper part of that jetty, a buildup of new land?

Mr. VALLIANOS. That is right.

Mr. ROE. And you can control that by pumping that material underneath the channel, whatever, and participate it along that other——

Mr. VALLIANOS. Yes, sir; the pipeline operation is very much the same as beach nourishment that is accomplished along many beaches.

I might add, sir, that in the 90 acres of land, for permanent use, only some 20 acres are involved in supporting the northjetty structure and its anchorage section. This anchorage lies below grade, that is, as far as the eye can see there is nothing there. There would be a structure below the grade of the sand in this area. On the other side only 5 acres of land are actually taken up by the southjetty structure. The remaining——

Mr. ROE. Excuse me, if I may.

Where you are proposing to put the anchorage of the jetty, what is the condition of the land there, just sandy beach?

Mr. VALLIANOS. Yes, sir, very low. It is referred to as a sand spit.

Mr. ROE. Is there any growth on that part?

Mr. VALLIANOS. There are some hummocks and beach grasses but it generally can be described as a plain sandy low area which is ephemeral in nature. A large storm, as one did in 1962, could simply blow it out, and then a cycle begins again of that sand spit material being built up. But I would only say that the large amount of land for a permanent nature really lies in the roadways and storage areas that would be required for the initial construction and subsequent maintenance. Those land areas can certainly be used in periods interim to any maintenance operation.

And one last point I would like to make is that permanent accumulation of sand will occur in these shaded areas that you see here, totaling about 85 acres of land. So, in effect, a 90-acre permanent use is needed for operations, maintenance, and construction, but there will also be an offsetting growth or addition of 85 acres.

In concluding, Mr. Chairman, in order to maintain Oregon Inlet in as safe condition as possible, the Corps of Engineers has been performing intensive maintenance dredging with both corps and contract dredges. Through this effort and because of the good weather conditions this past fall, the channel was at about the dimensions authorized in 1950, when hopper dredging was stopped for the season about a month ago, or a month and a half ago.

Because of questions on the project's economic benefits, based on projected fishery resources available for harvest through use of Oregon Inlet, the Department of the Army is reviewing the project's economics. This—and I might add, Mr. Chairman, the reanalysis will determine whether there is a current economic justification for this project to move forward, and that reanalysis is scheduled, at least from Mr. Gianelli's office, Assistant Secretary of the Army, the latter part of June, June 30.

Mr. ROE. If I can interrupt you again.

Do you have any figures at all on the economic impact of the fishing industry there?

Mr. VALLIANOS. Sir, impacts——

Mr. ROE. I guess there is people going to testify that have that information.

Mr. VALLIANOS. Yes, sir.

Mr. ROE. OK.

Mr. VALLIANOS. This reanalysis will determine whether there is current economic justification for this project to move forward. Accordingly, while legislation, similar to title IV of H.R. 3082, would be needed for construction of the authorized project to proceed, the administration does not now have a position on the merit of the project or on those provisions of H.R. 3082.

Mr. Chairman, that concludes my prepared statement.

Mr. ROE. We want to thank you very much for your statement. Anyone have any questions that they want to ask Mr. Vallianos? Mr. Stangeland?

Mr. STANGELAND. Thank you.

What alternatives has the corps considered for keeping Inlet open, and how do these compare with the jetty plan in terms of costs, and the environmental effectiveness?

Mr. VALLIANOS. Yes, sir. Let me preface my comments, Mr. Stangeland, with this point, which seems somehow in the dialog concerning this project to get confused, and that is that what is taking place now in terms of maintenance pertains specifically to attempts at maintaining an authorized channel of 14 feet in depth minimum at low water.

Such a channel, with today's vessel sizes, vessels which on an average have grown, that is, commercial fishing trawlers, that must be of those sizes in order to be viable in today's market, are drawing 11 feet to 12 feet loaded. Such vessels, even if the channel were maintained with precision to 14 feet of depth, would have many difficulties at times negotiating Oregon Inlet because of the vessel motions that are experienced in the very intense wave climate that exists in Oregon Inlet.

So you could imagine a vessel drawing 11 feet of water to 12 feet of water pitching violently, as much as 6, 7 feet, in a channel that is only 14 feet deep. Therefore, what is being done in terms of maintenance dredging, successfully and unsuccessfully, really pertains to a survival situation for that industry. It does not pertain to its growth and viability on a long-term basis. To do that would require a 20-foot channel, at least at minimum low water depth.

So we must never lose sight of those two issues. There are opponents of this project that say such a depth is not required. This flies in the face of the reality of the character of the modern fishing fleet on the Atlantic coast.

Now, to get to your question concerning what we have investigated. We are primarily, I might say, a dredging organization. We have dredged the waters of the United States for 200 years. We are the only agency of the Government having background and experience in that particular mode of improvements to navigation.

Now, as a matter of course, we always investigate two methods of improvement of navigation through an inlet. One is to apply intensive dredging, and the other, of course, is to provide a means of interdicting sand before it enters into the navigation channel, and in the course of these investigations pertaining to Oregon Inlet, we very much, in detail, investigated the option of dredging.

Mr. STANGELAND. So, in other words, so we do not plow over old ground, you have two alternatives, you use a dredge, or you use a jetty. There is no other alternative?

Mr. VALLIANOS. No, sir.

Mr. STANGELAND. Thank you.

What actions are planned by the corps to mitigate for potential environmental damages?

Mr. VALLIANOS. The primary potential damage which is characteristic of jettied inlets on sandy coasts is a possibility of interdicting sand, and doing nothing about it; beach erosion will occur on one side of the jetties. That is a classic pattern and has been known as long as jetties have been built, for several hundred years.

Many years ago, not even many years ago, 20 or 30 years ago, it did not matter. Coastal lands were cheap, and there were very few values perceived by the public in terms of aesthetics. So jetties were built, and the shores eroded.

For example, a case that might be brought up today is Ocean City Inlet, a case of a jetty-stabilized inlet in which no sand bypassing was provided down the coast, and the shoreline eroded away. Nothing mysterious about that. It will happen.

However, to counterbalance that, because of the values of coastal land, environmental values, economic values, et cetera, for several years engineers around the world have devised methods to bypass sand, to make sure that the sediment flow along the coastline is uninterrupted arbitrarily and capriciously by the acts of man. It is very much the same as environmental controls of all sorts that we have today, to account for new values.

So we have provided here a very studied case of sand bypassing, one involving a transportable breakwater system, to protect a dredge operating on the seaward side of these beaches. It is a very flexible system in terms of its capability to bypass sand from any direction. We can locate our breakwaters and our dredge plant anywhere the sediment accumulates, we do not depend on it depositing in one specific location.

We allow for tremendous variability in production. We can bypass 500,000 cubic yards, 100,000 cubic yards or a million cubic yards, and fourth, this system has been devised in the interest of the national park system, so that we do not have a permanent bypassing plant on the site, which may be visually offensive.

In addition to that, sir, I might add we have an auxiliary sand bypassing system designed which we can deploy one side or the other, for interim bypassing measures that might be required, for example, small quantities of sand to be transferred at any one time.

This involves placing a portable dredge on the above water portions of the sand accumulation, and dredging them from one side to the other of the inlet, as required.

Mr. STANGELAND. How wide is that in total?

Mr. VALLIANOS. It is variable, sir.

Mr. STANGELAND. Well, approximately?

Mr. VALLIANOS. At this point in time, the jetty spacing is about 4,000 feet wide. Our design, may I add, is very flexible. We have specifically arranged our designs to allow us to build these jetties anywhere in the range of 2,500 to 5,000 feet apart, depending on what the condition of the site is at the time we initiate construction.

We initially had only a 2,500-foot spacing, expecting that construction would begin early. There have been many delays in this project, as you might well know.

As a result of that, tremendous changes have occurred in the inlet. When we began project design, the inlet was only 2,500 feet in width. It is now 4,000 feet. It could go as far as 7,000 feet, with this area being blown out by a storm that may occur tomorrow. It may again narrow down to 2,500 feet. So our design is very flexible, and at the time of construction, we can build this project to have a jetty spacing anywhere from 2,500 to 5,000 feet.

Mr. STANGELAND. What do we see on Bodie Island and Pea Island? Is that just an island of sand, with little or no vegetation?

Mr. VALLIANOS. No, sir; this particular portion here, this sandspit, which is the southern end of Bodie Island, is sandy and low. There is some vegetation, but primarily it is simply a sandy land farm.

Pea Island, particularly the nothern end of Pea Island, is very high topographically, with sand dunes with vegetation covering the dunes.

One thing that has been happening on the north end of Pea Island—I might add, for which we take no account and, incidentally claim no benefits, because of the variability of the width of the inlet as I alluded to earlier—in the past 9 years, there has been a trend, a pattern in which there has been an enormous amount of erosion on the Pea Island side of the inlet.

The loss rate there in the past 9 years is something like 13 acres per year. Whereas that land area immediately juxtaposed to this inlet would absolutely be stabilized by this jetty structure. There is no claiming of benefits there for land loss prevented.

However, one might say hypothetically, in a conceptual model, long term, geologically speaking, that there is a balance between erosion on one side of the inlet and accumulation on the other. There has been some alluding to that situation at Oregon Inlet.

I would not argue that on a long-term basis. But I say, though, in the 9 years that have passed, from this point back in time, there has been no such thing occurring at Oregon Inlet. There has been very little land gained here. There has been a net loss of adjacent lands of about 12 to 13 acres per year, for a 9-year year period.

Mr. STANGELAND. Now, isn't that jetty in effect a concrete seawall that extends on into the ocean?

Mr. VALLIANOS. Yes, sir, it is stone. We have two designs developed. One of natural stone, totally, and another a composition of natural stone and artificial stone units, made of concrete. The basis for those two designs is to try to get competition in the bidding from the construction point of view.

Mr. STANGELAND. What is the elevation of the wall around Pea Island?

Mr. VALLIANOS. The elevations vary from 8 to 9½ feet above mean sea level. They are about 8 feet above mean sea level here, and there is a section which goes up to 9½ feet above mean sea level.

These anchorages here, though, on the northside, on which there is an awful lot of offroad vehicle movement by fishermen, those anchorages are below ground. They are only 3½ feet above mean sea

level crest, and the land is somewhere between 5½ and 6 feet above mean sea level. So there is no obstruction to the movement of offroad vehicles past this zone, and the use of these shorelines back to this spit. The only place we would find obstruction is right where the jetty trunk is shown in this way.

Mr. STANGELAND. Are those sandy swimming beaches on the ocean?

Mr. VALLIANOS. Well, they are, in this area, but the inlet is such a dangerous, treacherous area, that I would say what swimming is done there would be extremely hazardous.

Mr. STANGELAND. Do the jetties calm the turbulence in the inlet?

Mr. VALLIANOS. Yes, sir; the jetties do provide shelter—may I say there is, as you can see, quite an exposed area—half a mile to as much as 5,000 feet. We expected we would probably be building jetties spaced in the range of 3,500 feet, the way the inlet had been behaving recently.

But let me say that the turbulence of an inlet is a matter that pertains to the difference between a dredge-maintained channel inlet and a jettied inlet, and that these jetties, which really would only protrude out to about 3,800 feet offshore from the beachline, often are referred to as mile long. They are not 1 mile long, but in any case they prevent the bent wave rays from coming back into the inlet, so that if you go through a natural inlet, it is a very confused pattern, and if you look at it from an aircraft, it almost looks like a perfect checkerboard, because of its phenomenon referred to as wave retraction, which I would not go into. Wave rays bend, no matter which way they come toward an inlet, and they cause an extremely confused wave pattern, which is absolutely dangerous to navigation.

The one thing that jetties do is block all of that confused crossing of waves through the inlet, so that the navigator is really confronted with seas that are essentially ahead of him on his bow, or along his quarters, either stern or bow. So there is quite a difference in safety, in terms of an open inlet versus one that has jetties.

Mr. STANGELAND. Thank you.

The testimony of the Department of Interior states that they have been working to find a compatible alternative to keep the inlet open.

In what ways, to your knowledge, has the Department of Interior been working with the corps to find a solution to the sedimentation problem, rather than merely opposing the jetties?

Mr. VALLIANOS. The Department of the Interior had a suggestion which we explored with them. We, as I mentioned, look at dredging before we start looking at jetties—and, again referring to this 20-foot depth channel—you need to dredge intensely to attempt to maintain a channel that deep in the environment out there, and as wide as 400 feet. This requires taking an awful lot of sand out of the system.

In fact, it gets worse than a jetty situation. Because jetties allow sand to be driven off by the waves naturally, when wave energy reverses. Conversely, if you dig a deep trench, an incision through an inlet depth, that incision, if it is deep enough, really acts like a crevasse. It entraps everything that comes to it, so in effect you could—if you do not return that material, if you do not sand bypass

with an intensive dredging effort—cause really extensive beach erosion.

So when we looked at an alternative dredging plan, we have to bring the material dredged from this channel, the navigation channel, back to a point where we could discharge the accumulated sediment back onto the beach, again sand bypassing with a dredging operation. This proved to be very expensive.

So when DOI was reviewing the project, they had what was a good suggestion, and we have tried that sort of thing on a very small scale. They said, look, why not just take the sediment dredged out of the channel, bring it as close to the beach zone as you can, dump it and see if the natural wave action will carry it to the beach, and nourish the beach that way, rather than having to pump this massive amount of sand onto the beaches.

That was advantageous also, not only in terms of cost, but conceptually it was advantageous, since their land would not have to be used, in effect, they would not have to issue a permit, just do it.

So we looked at that in detail, and the only way that we could look at something like that and make an engineering judgment was to use two latest state-of-the-art computer models, one through our Waterways Experiment Station, and another through a private consulting organization, a very prominent and eminent scientist and engineer. We have found that we must do that, because the wave energy at this particular site and all these sites has unique characteristics, and that there is no good generalization that we can make about the coastline. Therefore, we must conduct a detailed study in order to come out with some conclusions.

These two independent models gave about the same result, one worse than the other, but the best results were that if we dredged and dumped the sand, year, after year, after year, the rate of movement back to the shore was only about 25 percent per year of what we dumped. The net effect of that was a massive erosion of the island, excluding the natural erosion that occurs there today, which is quite high, in the range of 6 to 7 feet per year, retreat to the beachline. Assuming that the beaches were stable at this point in time, and we began such a process of interdicting all the sediment here through intensive dredging and dumping it offshore, that island would erode away in a period of 16 years. The upper 3 miles would lose not only the acreage, about 450 acres, I believe, but all the cultural development there, the highway, the highway access, the Coast Guard station which is located there, and anything that U.S. Fish and Wildlife Service maintains and operates along that northern 3 miles of Pea Island.

We prepared a report, and submitted it to the Department of Interior.

Mr. STANGELAND. Thank you.

I have no further questions.

Mr. ROE. Any further questions?

Let me ask you something.

Unfortunately, neither one of those maps—I do not mean it unkindly, are big enough to give us a general overview of that whole area.

As we come off the Atlantic Ocean, are there other channels in those areas?

Mr. VALLIANOS. The first entrances through the Barrier Island, the only entrance north of Oregon Inlet, Mr. Chairman, would be the Chesapeake Bay—I am sorry, Bodie Inlet, which is a small inlet at Virginia Beach. But in terms of entering a large estuary, the only one is the Chesapeake Bay, and south of there you have to go, I suppose, about 50 miles or so, as the bird would—or the crow would fly, to Hatteras Inlet.

Mr. ROE. Seagull, maybe.

Mr. VALLIANOS. Yes, sir. The problem is to get to Hatteras Inlet, around Cape Hatteras, to the south of that point, about, I guess 45 miles, somebody might correct me on these distances. But in that range of 45 miles there is the enormous Diamond Shoals, an extensive shallow area that protrudes out into the ocean, which as Congressman Jones referred to as the "graveyard of the Atlantic". Vessels must make passage seaward of that protrudence to get back into Hatteras Inlet, and that travel distance perhaps, I would be really guessing, but it is extremely hazardous because of the character of the waters that exist there.

Mr. ROE. What I am trying to get at—let me ask one more question.

There is a bridge across there. What else is being used there? Is there a Coast Guard station and a bridge there?

Mr. VALLIANOS. Yes, sir.

Mr. ROE. What other environmental activities? Is there any environmental work going on in that area?

Mr. VALLIANOS. Yes, sir; there is extensive work by the Department of the Interior, in management of the wildlife refuge on Pea Island. I am sure the DOI representatives could address that matter exactly.

Mr. ROE. Well, I just want a general idea of what it looks like.

Mr. VALLIANOS. And, of course, the entire Cape Hatteras National Seashore, that has lots of good vegetation.

Mr. ROE. So really, basically, from what your explanation is, that the confrontation lies in how to get in and out of there without doing the least amount of damage, with the safety of the vessels. Basically I guess that is what we are talking about.

Mr. VALLIANOS. Yes, sir.

Mr. ROE. And there is disagreement as to what form that should take?

Mr. VALLIANOS. Yes, sir.

Mr. ROE. Let me ask one more question.

Now, therefore, as you go through those Barrier Islands, only because I do not understand from this layout, is there a sound behind that?

Mr. VALLIANOS. Oh, yes.

Mr. ROE. And then you go to the—let me pose the question—you go through that area, something like Barnegat Inlet in New Jersey is what I am trying to get at. And then there would be what, housing back there, or summer homes, and water-oriented recreation, plus the fishing industry?

Mr. VALLIANOS. Yes, sir; it is a large embayment, Mr. Chairman. There are two sounds that are referred to as Pamlico and Albemarle Sounds. I am sorry we do not have an overview of the entire region.

Mr. ROE. We are going to look at that. I would envision they come through this inlet, as through my own coast, and there is housing in there, and other fisheries resources. Do they do any packing or processing in there?

Mr. VALLIANOS. Yes, sir.

Mr. ROE. So we are not just simply talking about fishermen going, like daytime fishermen going out, not recreation; we are talking about the commercial fishing industry?

Mr. VALLIANOS. Oh, absolutely.

Mr. ROE. Then the next question would be, this is the natural inlet to get this whole relationship working in that area?

Mr. VALLIANOS. Yes, sir.

Mr. ROE. All right.

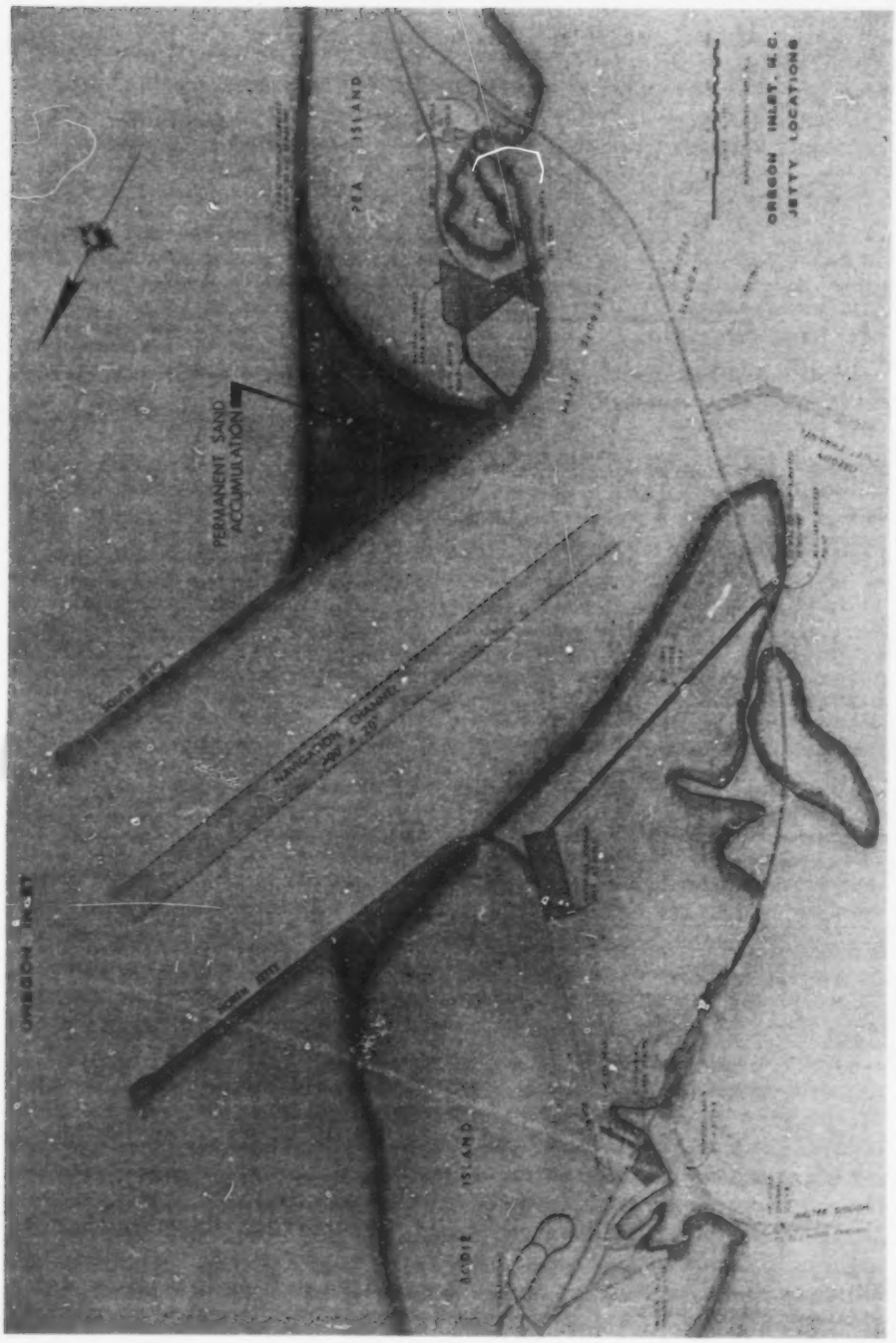
I do not have any further questions.

Any further questions?

Mr. STANGELAND. I have no further questions at this time, but it might be well if we could get copies of those maps for the record, particularly the larger one.

Mr. VALLIANOS. I would be happy to, yes, sir.

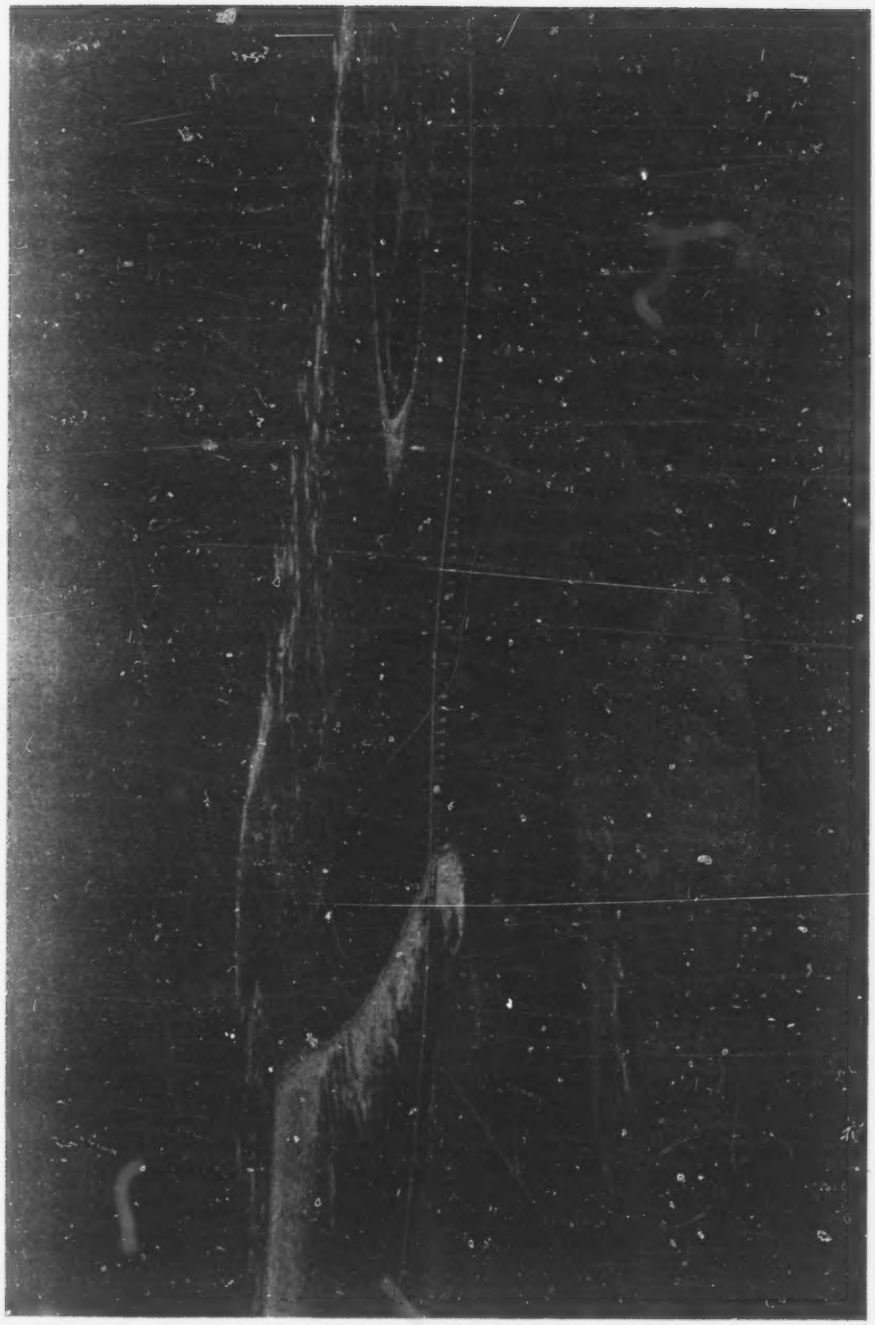
[The following was received for the record:]

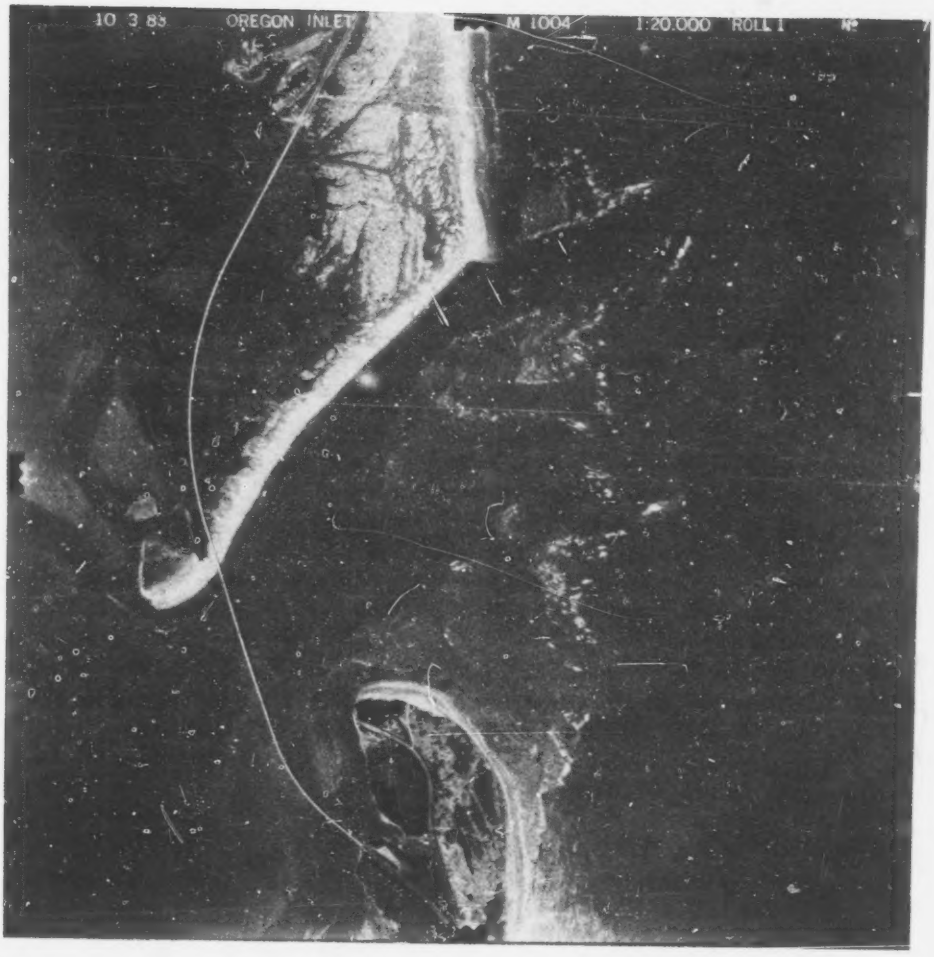

OREGON INLET
PEA ISLAND
PERMANENT SAND ACCUMULATION
NAVIGATION CHANNEL
400' x 30'
SOUTH JETTY
NORTH JETTY
BODIE ISLAND
OREGON INLET, N.C.
JETTY LOCATIONS

Mr. ROE. Are there any up-to-date photographs?

Mr. VALLIANOS. Oh, yes; yes, sir, I would be happy to furnish those to the committee.

[The following was received for the record:]




10 3 85
OREGON INLET
M 1004
1:20,000
ROLL 1

Mr. ROE. Well, I think for the committee, as you know, goes into these things intently, and we would like to have you make these available. We would like to see those, to get a better view.

Mr. VALLIANOS. Yes, sir.

Mr. ROE. No further questions?

We want to thank you very much for your testimony, and we appreciate your coming.

[Subsequent to the hearing Representative Stangeland submitted the following to Mr. Vallianos. The letter and response follow:]

CONGRESS OF THE UNITED STATES,
HOUSE OF REPRESENTATIVES,
*Washington, D.C., February 22, 1984.*

Mr. LIMBERIOS VALLIANOS,
*Chief, Coastal Engineering Branch, Wilmington District, Corps of Engineers, Wilmington, N.C.*

DEAR MR. VALLIANOS: Thank you for your testimony of Februrary 7, 1984, regarding the Oregon Inlet provision in H.R. 3082. The information you provided will certainly be quite helpful to the Subcommittee.

Because of issues raised later in the hearing, I would like to receive some additional information for the record. We need this information as soon as possible, but not later than March 2, 1984.

Some witnesses claimed that dredging of the channel is a better alternative than the jetties. While it is understood that the reliability of the dredging-only alternative is a significant question, we would like to have a comparison of the costs of the two proposals. The comparison should include first costs and estimated operation and maintenance costs for each alternative over the life of the project. In addition, if there are other economic, engineering or environmental issues related to either proposal which you feel would be of help, please provide this information.

Again, thank you very much for your testimony and we look forward to your earliest response.

Sincerely,

ARLAN STANGELAND,
*Member of Congress.*

---

DEPARTMENT OF THE ARMY,
WILMINGTON DISTRICT CORPS OF ENGINEERS,
*Wilmington, N.C., February 28, 1984.*

DEAR MR. STANGELAND: This is in reply to your letter dated February 22, 1984, concerning the Manteo (Shallowbag) Bay project with specific reference to cost differences between the authorized plan involving jetty stabilization at Oregon Inlet and an alternative dredging plan. You also requested any additional information which might be of importance in evaluating the merits of the project.

In accordance with the requests contained in your correspondence, enclosed for your consideration is a "Basic Information Summary" pertaining to the Manteo (Shallowbag) Bay project which addresses these matters.

If we can be of further assistance, please let us know.

Sincerely,

LIMBERIOS VALLIANOS,
*Chief, Coastal Engineering Branch.*

Enclosure.

BASIC INFORMATION SUMMARY—MANTEO (SHALLOWBAG) BAY PROJECT, N.C.

INTRODUCTION

Corps of Engineers' involvement in the Manteo (Shallowbag) Bay Project, and in particular Oregon Inlet, concerns two separate but interrelated efforts, namely, dredge maintenance of the present inlet channel having a project depth of 14 feet at low water and a width of 400 feet, and planned jetty stabilization of Oregon Inlet with the provision of an inlet channel having a depth of 20 feet at low water and a width of 400 feet. The first effort focuses on establishing sufficient navigation capability in Oregon Inlet to allow for survival of the fisheries industry in the northeast-

ern or "Outer Banks" region of North Carolina, while the second effort is directed at assuring the long term viability and growth of that industry. The history of dredge maintenance for the existing 14-foot deep channel has established a large body of information on the efficiency of dredging operations at the site, and that information is highly relevant to the issue of the feasibility of an expanded dredging alternative in lieu of jetty stabilization as a means of long term navigation improvements at Oregon Inlet.

The paper describes: (a) the maintenance dredging effort, its associated costs, and attendant results from its beginning in 1962 to the present time; and (b) the plans for provision of long term navigation improvement at Oregon Inlet including the authorized but unconstructed jetties for stabilization of the inlet and the evaluation of alternative dredging options.

## MAINTENANCE DREDGING (EXISTING CHANNEL)

The ocean entrance channel project at Oregon Inlet was authorized in 1950 with a channel configuration specified to be 14 feet at low water with a bottom width of 400 feet. Initial channel excavation was accomplished in 1960 and 1961 with employment of the Corps hopper dredge *Hyde*. Maintenance dredging in the Oregon Inlet channel began in 1962 and was performed exclusively by the *Hyde* through 1964. In 1965 and extending to 1972, combined employment of the *Hyde* and the Corps sidecast dredge *Merritt* was implemented. Use of the *Merritt* was necessitated by the fact that channel depths, normally in the range of 8 to 11 feet at low water, were not adequate to allow for safety and/or operational requirements of the *Hyde*. During those combined dredge deployments, the *Merritt*'s task was to excavate a pilot channel of adequate size to allow the *Hyde* to execute the maintenance mission in safety. In this connection, the sidecast dredge *Merritt* has a consistent draft of about 5 feet, whereas the hopper dredge *Hyde* would draw 9 feet unloaded and 13 feet when fully loaded with dredged material. Notwithstanding use of the *Merritt* in pilot channel development, unsafe conditions frequently confronted the *Hyde* and necessitated partial load operations due to shallow channel depths. During dredging in 1968, heavy seas in Oregon Inlet drove the *Hyde* aground where it remained for 2 weeks and was nearly lost. From 1973 through 1982, all maintenance of the Oregon Inlet ocean entrance channel was accomplished by sidecast dredges, primarily the Corps *Schweizer* having a draft of 9 feet. Intermittent assistance was provided by the *Merritt* and the *Fry*, both having drafts of about 5 feet. The dredging courses in Oregon Inlet have always followed the deepest natural water depths across the ocean shoal. In the period 1973–1982, the line of natural water followed by the dredging vessels was juxtaposed to the north shoulder of the inlet with heavy shoaling concentrated as its seaward end. However, during 1982, it was evident that another zone of relatively deep water was developing along an alignment centrally located across the ocean shoal. Since the dredging effort in the 1980–82 period had been ineffective in creating navigable depths for any reasonable time, it was decided to concentrate the 1983 dredging operation along the centrally located deep water area and to increase the dredging production by the addition of a contract hopper dredge to the Corps sidecast dredges operating at the site. This plan was implemented with the employment of the contract hopper dredge *Mermentau* and the Corps sidecast dredges *Fry, Merritt,* and *Schweizer*.

Oregon Inlet is subject to a large influx of sediments from the adjacent beaches due to the intense wave climate along North Carolina's "Outer Banks." The history of maintenance dredging clearly demonstrates the difficulties of maintaining a dredged channel through the particular inlet. The maintenance dredging history in terms of cost and effectiveness is displayed by Table 1 and Figure 1, respectively. In the period during which maintenance was performed by hopper dredges *Hyde* and *Mermentau*), the dredging record documents that depths at or greater than 14 feet existed only some 28 percent of the time, and a channel width of 400 feet was never attained. Similarly, the sidecast dredging operations have been able to provide project depths of 14 feet or greater only 16 percent of the time, but have never developed the authorized bottom width of 400 feet.

TABLE 1.—OREGON INLET DREDGING HISTORY

| Fiscal year | Dredges | Volume removed cubic yards | Dredging cost, current price level $ |
|---|---|---|---|
| 1960 | Hyde | 62,991 (New Work) | $192,000 |
| 1961 | do | 24,013 (New Work) | 132,000 |
| 1962 | do | 109,186 (Maintenance) | 252,000 |
| 1963 | do | 76,868 (Maintenance) | 230,000 |
| 1964 | Hyde and Merritt | 20,600 (Maintenance) | 502,000 |
| 1965 | do | 283,546 (Maintenance) | 531,000 |
| 1966 | do | 184,733 (Maintenance) | 500,000 |
| 1967 | Hyde | 215,232 (Maintenance) | 216,000 |
| 1968 | Hyde and Merritt | 297,176 (Maintenance) | 1,143,000 |
| 1969 | do | 202,036 (Maintenance) | 1,337,000 |
| 1970 | Hyde, Merritt, Schweizer | 170,745 (Maintenance) | 986,000 |
| 1971 | Hyde | 132,149 (Maintenance) | 840,000 |
| 1972 | Hyde and Merritt | 434,355 (Maintenance) | 1,704,000 |
| 1973 | Merritt and Schweizer | 60,445 (Maintenance) | 381,000 |
| 1974 | do | 219,772 (Maintenance) | 929,000 |
| 1975 | Schweizer | 182,068 (Maintenance) | 257,000 |
| 1976 and 76T | do | 372,463 (Maintenance) | 1,081,000 |
| 1977 | do | 312,485 (Maintenance) | 945,000 |
| 1978 | Merritt and Schweizer | 358,127 (Maintenance) | 1,014,000 |
| 1979 | Schweizer | 415,000 (Maintenance) | 970,000 |
| 1980 | do | 438,000 (Maintenance) | 732,000 |
| 1981 | Schweizer, Merritt, and Currituck | 693,080 (Maintenance) | 1,190,000 |
| 1982 | Schweizer, Merritt, and Fry | 981,217 (Maintenance) | 1,876,000 |
| 1983 | Schweizer, Merritt, Fry, and Mermentau | 1,034,416 (Maintenance) | 2,927,000 |
| 1984 | do | | [1] 4,561,000 |

[1] Projected.

Particularly severe shoaling conditions in Oregon Inlet were manifested in the period 1980–83. In the winter of 1981–82, shoaling rates attendant with adverse weather conditions exceeded the capabilities of the combined efforts of the *Schweizer* and *Merritt* to prevent closure of the ocean entrance channel at Oregon Inlet. This had severe impacts on the commercial fishing industry of the northern "Outer Banks" because its primary production season extends from October to March. Since channel depths were only 8 to 9 feet at low water during the winter of 81–82, use of large, high production hopper dredges was not possible due to their deep draft characteristics. Use of the *Schweizer* and *Merritt* to develop a pilot channel for such dredges was not possible due to the combination of high shoaling rates and rough seas. With the abatement of weather conditions in the spring and summer of 1982, the *Schweizer, Merritt* and *Fry* were able to reestablish channel low water depths at or below the 14-foot project depth over a bottom width of about 200 to 250 feet. However, a single storm in December 1982 quickly filled the channel to a depth of 10 feet. It was not until the summer of 1983 that the combined employment of the Corps sidecast dredges and the contract hopper dredge *Mermentau* was able to provide a navigable channel along the new centrally aligned channel position. At this writing (27 February 1984) the channel has a minimum width of 270 feet and low water depths of 12 to 25 feet. Channel maintenance continues at present with the use of the side-casting dredges. It is remarked that success in developing these channel dimensions was largely due to unusually favorable weather and sea conditions which allowed for productive dredging operations during this winter period. Exposure of the channel, its behavior and resultant dimensions through the remaining 1983–84 winter season remains to be seen.

With respect to future maintenance dredging operations and their effectiveness, the environmental factors that have prevailed over the past 22 years and that have limited the efficiency of dredging operations in that period will unquestionably continue unchanged over time. The two controlling environmental factors are the severe wave climate at the site and the natural level of the inlet's seaward shoal through which the ocean entrance channel is dredged and maintained. The severe wave climate drives approximately 2 million cubic yards of sediment toward the inlet from the adjacent beaches each year. Peak sediment inflow to the inlet and concommitant rapid shoaling within the ocean entrance channel occur during

stormy conditions. At the same time, these conditions preclude or significantly limit dredging operations. Under such conditions, the inlet channel can be navigable on one day and on the next day or week be impassable. The time required to reopen the channel to navigation is dependent on the quantity of shoaling that has occurred, the dredge production capacity, and the ability to performing dredging as dictated by the subsequent state of the seas and water depths in the shoaled area. These variables are influenced to a large degree by the second important environmental factor, the natural depth of water over the inlet's seaward shoal. This depth is about 8 to 9 feet at low water, and natural forces are constantly at work to reestablish that level in the excavated channel. When the natural level is reached through rapid shoaling processes, the type and size of dredging plant that can be immediately employed in reopening operations is limited to those having shallow draft characteristics, specifically, dredges such as the *Schweizer* and *Merritt*. Although deeper draft, higher production dredges, such as the *Mermentau*, can be employed, such dredges require backup by the shallow draft sidecasters for pilot channel development and assistance in dredging shallow channel side slopes. Accordingly, the presence of higher production dredges at the site would not assure continued maintenance of project channel dimensions or rapid reopening of the channel following an intense shoaling episode. For example, the conditions existing over several months during the winter of 1981–82 prevented the *Schweizer* and *Merritt* from developing sufficient water depths to allow employment of a deeper draft, higher production dredging plant.

### LONG TERM IMPROVEMENTS

A normal procedure followed in evaluating the feasibility of improving the navigability of a coastal inlet is to compare the aspects of two basic and different approaches to such an improvement. Specifically, this involves the comparison of a plan involving stabilization of the inlet by control structures (jetties) to a plan relying solely on the use of floating dredge plant for the initial excavation and annual maintenance of an entrance channel through the inlet. In the case of Oregon Inlet, comparison of these basic alternatives in preauthorization studies and subsequent advanced engineering investigations resulted in findings favoring stabilization of the inlet by dual jetty structures. Descriptions and estimated cost of the basic long term improvement alternatives are given below.

### JETTY STABILIZATION

In 1970, the Congress authorized stabilization of Oregon Inlet by means of jetties and the provision of an ocean entrance channel having a depth of 20 feet at low water and width of 400 feet. The increase in channel dimensions was necessary to safely accommodate the general vessels now engaged in the North Atlantic Fisheries industry. The project also provides for sand bypassing at the inlet to prevent jetty-induced beach erosion. Further, connecting channels in Pamlico Sound, extending from Oregon Inlet to the Village of Wanchese would be deepened from a present depth of 12 feet to 14 feet, and increased in width from an existing 100 feet to 120 feet. Additionally, the project calls for expanding the harbor basin at Wanchese to have an area of 15 acres and a depth of 14 feet. This letter project feature was completed in 1979. No other project feature has been instituted to date. The overall authorized project layout is shown on Figure 2 with a larger scale representation of the jetty stabilization presented on Figure 3. If implemented, the authorized stabilization of Oregon Inlet would provide an assured all-weather navigation channel for vessel passage through the inlet. The costs of the project are given below at current price levels.

| | |
|---|---|
| Construction cost (4-Year Period) | $99,086,000 |

*Annual operations and maintenance costs*

| | |
|---|---|
| Sand bypassing | $3,668,000 |
| Jetty maintenance | 88,000 |
| Mitigation feature maintenance | 3,000 |
| Monitoring surveys | 68,000 |
| Interior channel maintenance | 329,000 |
| Navigation aids maintenance | 3,000 |
| Waterfoul management | 14,000 |
| Dike maintenance | 39,000 |
| Total | 4,212,000 |

Project expenditures that accrue over a fifty year economic evaluation period total $309,686,000 or approximately $310 million. These costs are obtained by adding construction costs to 50 years of projected operations and maintenance costs.

EXPANDED LONG TERM DREDGING ALTERNATIVE

The limitations on the present level of dredging at Oregon Inlet, as outlined with respect to maintenance operations, would also exist in the case of a more intensive dredging program directed at establishing and maintaining a channel low water depth of 20 feet and width of 400 feet. Hence, an indeterminancy will always exist in terms of the possibility of inlet channel closure and the subsequent time required to reopen the channel by dredging. Therefore, an expanded dredging alternative is not comparable to the authorized jetty stabilization plan which provides an assured navigation entrance. The risks associated with a dredging alternative also reduce potential project benefits. Additionally, increasing channel dimensions, particularly depth, create much greater demands on maintenance dredging capabilities. In this connection, the natural geometry of an inlet's seaward shoal is the end product of the integrated effects of tidal currents, wave action, and the associated sediment transport and deposition. Of particular importance, in that regard, is the natural elevation of the seaward shoal, 8 to 9 feet below low water. This elevation represents both the limiting elevation of natural sediment accumulation and the level below which littoral sediments will assuredly collect if the inlet shoal is entrenched by a navigation channel. With respect to this latter point, the rate of sediment accumulation increases exponentially with increasing depth of channel. For example, the most extensive dredging of a channel at the existing depth of 14 feet would require removal of only 20 to 25 percent of the total volume of sediment moving toward the inlet from the adjacent shores of Bodie and Pea Islands. On the other hand, if the Oregon Inlet channel is dredged to a depth of 20 feet, the dredging requirement would increase to approximately 100 percent of the total sediment influx toward the inlet, a quantity amounting to 1.5 to 2.0 million cubic yards per year. Such a dredging requirement would demand year-round operations. Furthermore, the large quantity of dredged material would have to be returned to the adjacent beaches to prevent severe and unacceptable erosion of those shorelines, particularly along Pea Island on the south and downcoast side of Oregon Inlet. In effect, an intensive dredging program at Oregon Inlet becomes, as a practical matter, a continuous and combined navigation maintenance and beach nourishment project. It is remarked that past and present maintenance operations at Oregon Inlet have not required beach disposal to avert dredging-induced beach erosion due to the quantities and methods involved in the maintenance dredging operations. Specifically, the hopper dredge *Hyde*, which disposed material offshore of the inlet shoal, removed annual quantities ranging from 20,000 to 300,000 cubic yards. In any year, the quantities were small with respect to the annual influx of about 2,000,000 cubic yards of sediments into the inlet environment. Similarly, in 1983 the hopper dredge *Mermentau* removed and disposed offshore a total of 458,000 cubic yards of material of which the preponderant amount involved existing or in situ inlet shoal material removed in creating the new centrally located navigation channel. With respect to sidecasting operations, that particular dredging technique does not remove material from the inlet environment and, hence, cannot impact significantly on littoral processes and associated beach behavior.

Given the need for a continuous channel maintenance and beach nourishment operation, the long term dredging alternative was formulated and evaluated to meet those technical requirements. This plan is displayed schematically on Figure 4. It consists of year-round hopper dredging (*Mermentau* Class) within the ocean entrance channel, and direct pump out of dredged material to the adjacent shore of Pea Island along a distance of 3 to 5 miles. The dredge discharge would be assisted by two land based booster-pump stations. Additionally, the navigation span beneath the bridge crossing Oregon Inlet would be maintained on a periodic basis by cutter-suction pipeline dredge with material disposal along the adjacent shore of Bodie Island. The costs of the long term dredging alternative including interior channels is given below at current price levels.

| | |
|---|---|
| Construction costs (6-month period) | $9,793,000 |

*Annual operation and maintenance costs*

| | |
|---|---|
| Inlet hopper dredging and beach disposal | $11,320,000 |
| Bridge span pipeline dredging and beach disposal | 2,189,000 |
| Mitigation feature maintenance | 3,000 |
| Interior channel maintenance | 329,000 |

| | |
|---|---|
| Navigation aids maintenance | 3,000 |
| Water fowl management | 14,000 |
| Monitoring surveys | 68,000 |
| Dike maintenance | 39,000 |
| Total | $13,965,000 |

The projected financaal costs or expenditures for the dredging alternative over a 50-year economic evaluation period amount to $708,043,000 or approximately $708 million.

When compared to the authorized jetty stabilization plan, the dredging alternative is far more costly to say nothing of the inherent physical uncertainties of maintaining the Oregon Inlet navigation channel from year to year solely by means of dredging. Comparison of the 50-year financial costs of jetty stabilization estimated at $310 million, to the $708 million cost associated with the dredging alternative, dramatically demonstrates the disparity in the costs of the two alternatives. The high cost and functional uncertainty of the long term dredging alternative renders it infeasible.

In an effort to fund a less costly dredging alternative and one that would not impact existing shoreline land use by requiring beach disposal, the U.S. Department of the Interior (DOI) proposed a second long term dredging option. The DOI proposal deviated from the Corps dredging plan to the extent that the dredged material would be disposal of in the nearshore zone as close to the beach as possible. A fundamental presumption in the DOI alternative proposal was that the excavated sediments disposed of in the suggested manner would be dispersed shoreward by wave action at a sufficient volume rate of transport to prevent dredging-induced beach erosion.

A full investigation was conducted to evaluate the DOI proposal. This investigation revealed that material deposited by a dredge plant in a minimum water depth of 17 feet would be dispersed onshore at an annual volume rate of transport amounting to 25 percent of a single year's volume (1.45 million cu. yds.) of dredged material. The disposal zone required to contain a single year's volume of dredged material would extend along a shore-parallel distance of 10,000 feet. Given the 25 percent annual rate of sediment dispersal, an overall shore-parallel disposal zone having a length of 40,000 feet would be required to conduct a continuous year-round dredging operation. With respect to shoreline behavior associated with the nearshore dredged material disposal scheme, the investigation found that severe erosion would occur along the northernmost 3 miles of Pea Island situated south of and adjacent to Oregon Inlet. In a short period of 16 years following implementation of the dredging/nearshore-disposal scheme, the northernmost 3 miles of Pea Island would be virtually destroyed. Damaged to land areas and cultural development in that time period would consist of a loss approximately 450 acres of land, destruction of 3 miles of N.C. Highway 12 including access to the bridge spanning Oregon Inlet, loss of the U.S. Coast Guard Station at Oregon Inlet, and loss of all facilities within the zone of erosion that are administered by the U.S. Fish and Wildlife Service. The time span of 16 years and associated erosion damages, referred to above, pertain only to effects directly attributable to the nearshore disposal scheme in the event of its implementation. These values do not reflect the added impacts that would occur as a result of natural erosion pattern which exists along the north end of Pea Island. Therefore, the destruction of the northernmost 3 miles of Pea Island would, in reality, occur in less than 16 years if the natural erosion were to be exacerbated by the dredging/disposal scheme proposed by DOI. Given the unacceptable level of beach erosion associated with the DOI proposal, that alternative was rejected.

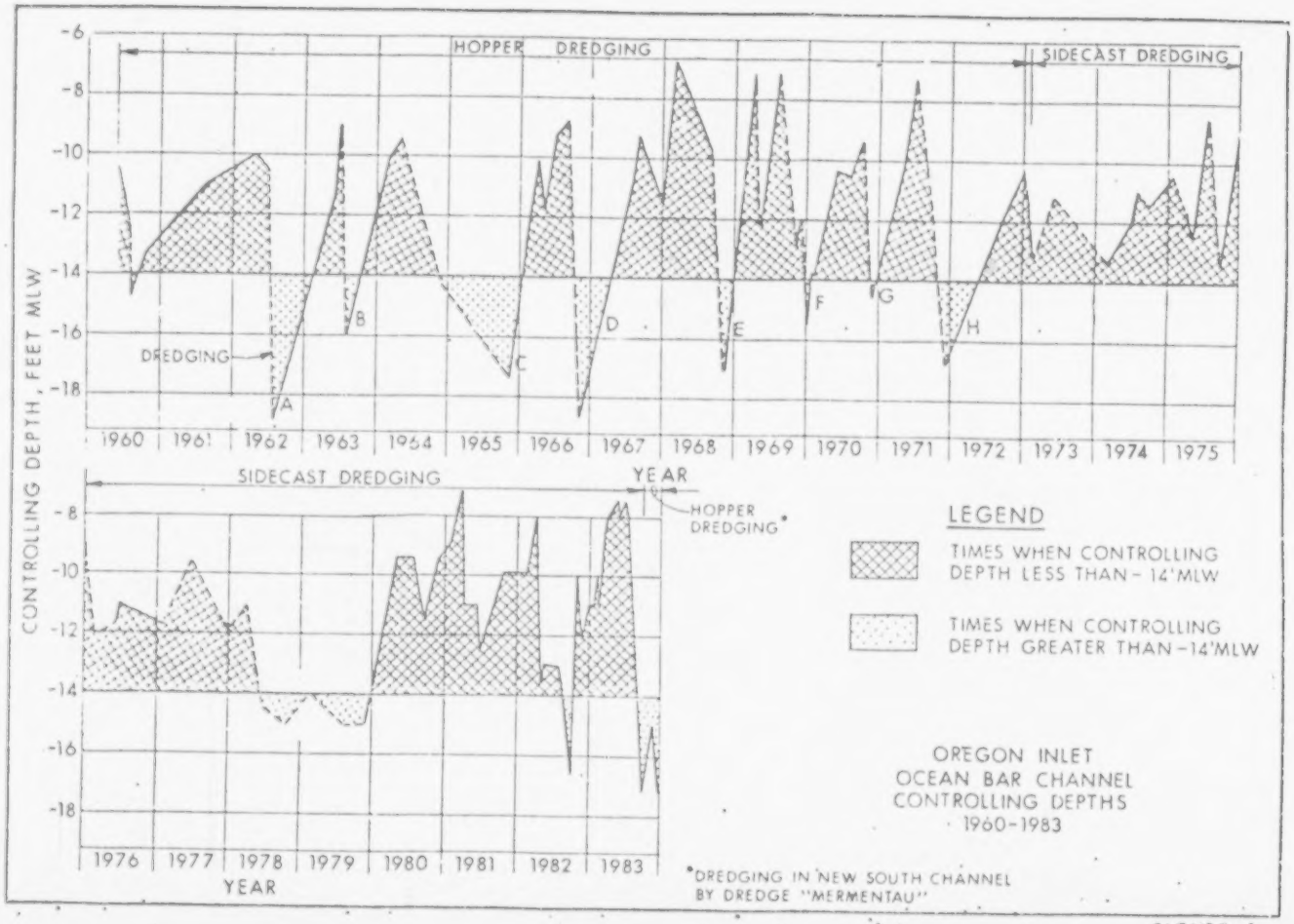

HOPPER DREDGING
SIDECAST DREDGING
DREDGING
A
B
C
D
E
F
G
H
-6
-8
-10
-12
-14
-16
-18
1960
1961
1962
1963
1964
1965
1966
1967
1968
1969
1970
1971
1972
1973
1974
1975
CONTROLLING DEPTH, FEET MLW
SIDECAST DREDGING
YEAR
HOPPER DREDGING*
1976
1977
1978
1979
1980
1981
1982
1983
YEAR
LEGEND
TIMES WHEN CONTROLLING DEPTH LESS THAN - 14'MLW
TIMES WHEN CONTROLLING DEPTH GREATER THAN -14'MLW
OREGON INLET
OCEAN BAR CHANNEL
CONTROLLING DEPTHS
1960-1983
*DREDGING IN NEW SOUTH CHANNEL BY DREDGE "MERMENTAU"

FIGURE 1

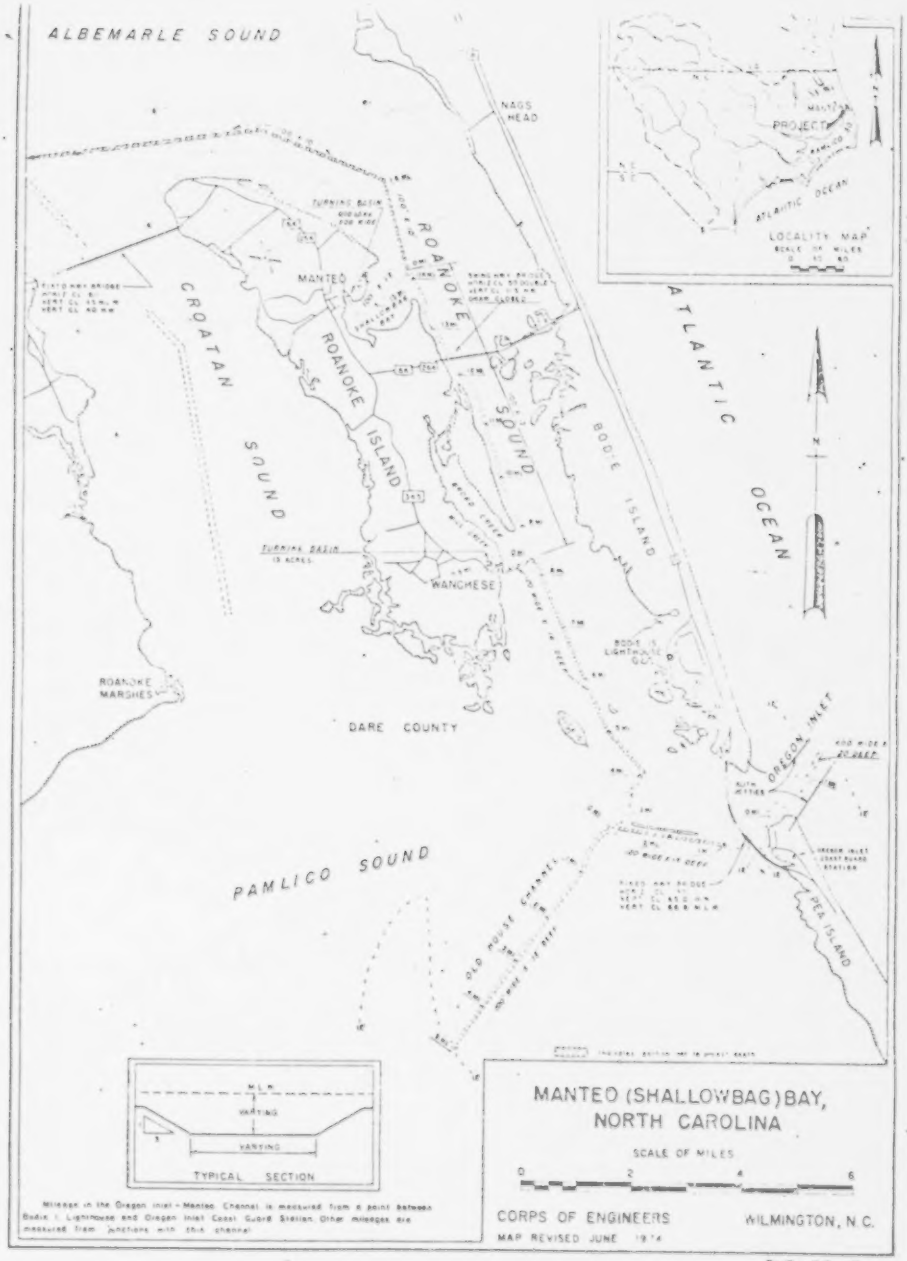

ALBEMARLE SOUND
NAGS HEAD
ROANOKE SOUND
MANTEO
CROATAN SOUND
ROANOKE ISLAND
ATLANTIC OCEAN
BODIE ISLAND
WANCHESE
ROANOKE MARSHES
DARE COUNTY
OREGON INLET
PAMLICO SOUND
PEA ISLAND
OLD HOUSE CHANNEL
LOCALITY MAP
PROJECT
ATLANTIC OCEAN
M.L.W.
VARYING
TYPICAL SECTION
MANTEO (SHALLOWBAG) BAY,
NORTH CAROLINA
SCALE OF MILES
0 2 4 6
CORPS OF ENGINEERS
WILMINGTON, N.C.
MAP REVISED JUNE 1974

FIGURE 2

FIGURE 3

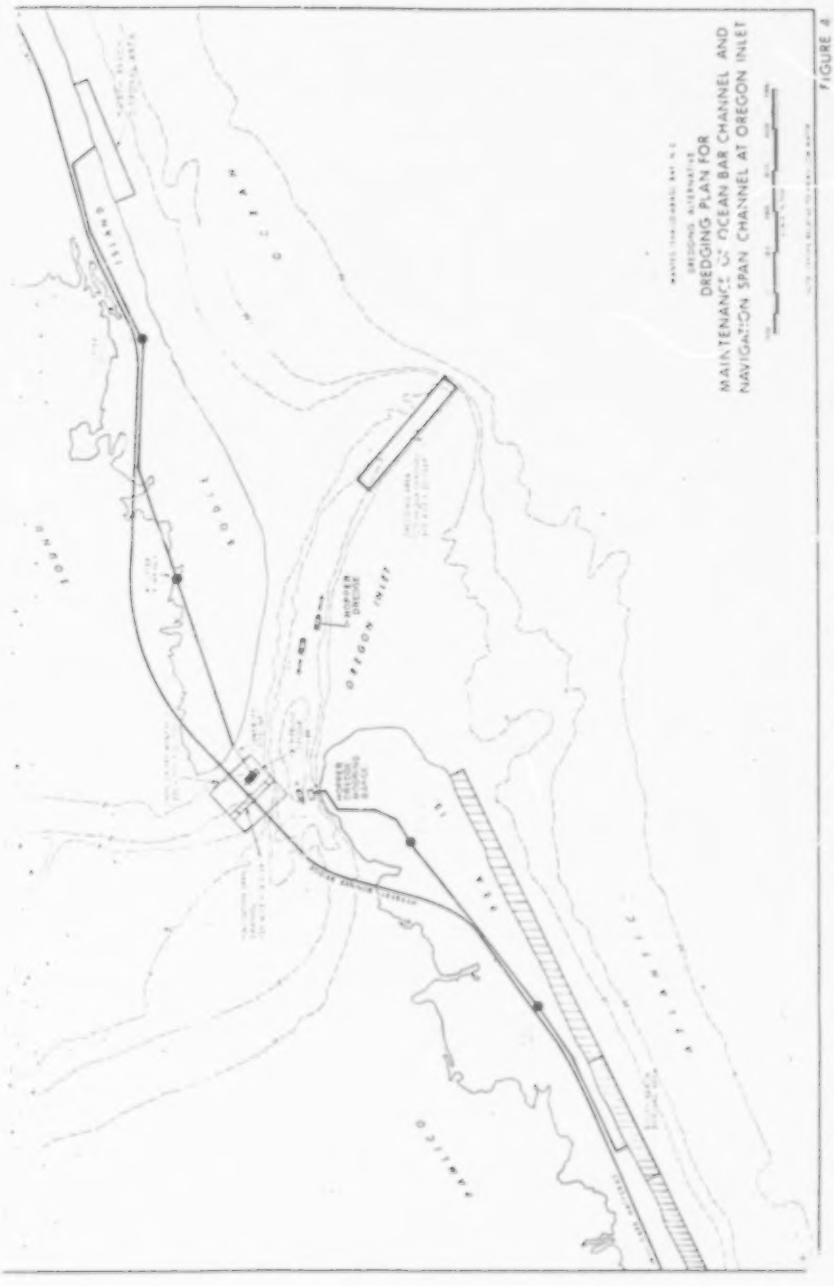

DREDGING PLAN FOR
MAINTENANCE OF OCEAN BAR CHANNEL AND
NAVIGATION SPAN CHANNEL AT OREGON INLET

FIGURE 4

Mr. ROE. Our next witness this morning, representing the Department of the Interior is the Honorable J. Craig Potter, Deputy Assistant Secretary for Fish and Wildlife and Parks.

Mr. Potter, we want to welcome you to our committee.

Is this a statement by Mr. Arnett?

Mr. POTTER. Yes, sir, Mr. Chairman.

Mr. ROE. If the gentleman would proceed.

**TESTIMONY OF HON. J. CRAIG POTTER, DEPUTY ASSISTANT SECRETARY FOR FISH AND WILDLIFE AND PARKS, DEPARTMENT OF THE INTERIOR; ACCOMPANIED BY DR. JAY GOGUE, REGIONAL CHIEF SCIENTIST, NATIONAL PARK SERVICE; AND ROBERT McCUE, CHIEF, BRANCH OF FEDERAL PROJECTS, DIVISION OF ECOLOGICAL SERVICES, U.S. FISH AND WILDLIFE SERVICE**

Mr. POTTER. Mr. Chairman, I am Craig Potter, and I am appearing here today on behalf of Assistant Secretary Ray Arnett. I am his deputy. He is the Assistant Secretary for Fish and Wildlife and Parks of the Department of the Interior.

I am accompanied at the table by Dr. Jay Gogue, who is the regional chief scientist for the National Park Service, and by Bob McCue, who is the chief of the branch of the Federal projects for ecological services within the Fish and Wildlife Service.

We appreciate the opportunity to be here, Mr. Chairman, to testify concerning title IV of H.R. 3082. As you know, this title would authorize the Secretary of the Army to use Department of the Interior lands located within Cape Hatteras National Seashore and Pea Island National Wildlife Refuge to build the Manteo (Shallowbag) Bay jetties at Oregon Inlet.

The project, as proposed by the Corps of Engineers, as we understand it at the present time, would require construction of jetties on the national seashore and national wildlife refuge. It would also require routine placement of dredged material on the refuge, and periodic placement on the seashore.

The National Wildlife Refuge System Administration Act, Mr. Chairman, permits this type of activity on a refuge if it is found to be compatible with the purposes for which the refuge was established.

Pea Island national wildlife refuge was established in 1937 for the purpose of providing, and I quote: "a refuge and breeding ground for migratory birds and other wildlife."

In a compatibility study issued on May 28, 1982, regarding issuance of a permit for jetty construction and dredged material placement on the refuge, the Fish and Wildlife Service concluded that the project as currently proposed was not compatible with the purpose for which the refuge was established.

We concluded that the proposed project would create conditions, including accelerated erosion, that would significantly alter the refuge environment, resulting in the deterioration or elimination of wildlife habitat. The wildlife that we are talking about, Mr. Chairman, includes Canadian geese, snow geese, the black duck, gadwall, redhead, whistling swan, and many types of shorebirds. The threatened Atlantic loggerhead sea turtle has been seen in the area, and

other species, such as bluefish, sea trout, summer flounder, and blue crab might also be affected.

Consequently, no right-of-way permit can be issued under the existing authority, as we understand it. In addition, under existing law, the National Park Service does not have the authority to allow jetty construction on the seashore. Title IV of H.R. 3082 would authorize the Army Corps of Engineers to use this land to carry out the project at Manteo Bay.

Mr. Chairman, we recognize the interest in keeping a safe, navigable channel at Oregon Inlet, and we support the goal of keeping the inlet open. However, we are still searching for ways to keep the channel open without adverse impact on the refuge and the seashore, and in particular, we are interested in the dredging proposal which has been discussed to some extent here this morning.

Until all information on this project is in and evaluated, including the corps' reanalysis on the economics of the project a supplement to the final environmental impact statement, and some feature design memoranda on the sand bypass system, we are unable to really comment on the project, and we take no position on this provision in H.R. 3082, as a result.

That concludes my prepared statement, Mr. Chairman, and we will try as best we can to answer any questions that you or the other members might have.

Thank you.

Mr. ROE. We want to thank you for your testimony.

Let me ask you a couple of questions.

You indicated that the Pea Island was acquired. Was it given to the Interior Department to purchase it?

Mr. POTTER. No; I am not sure how it came about. Bob, you may be able to answer. It was authorized in 1937. I think at that time, it was—I do not know whether it was privately owned.

Mr. MCCUE. I believe it was established by Executive order.

Mr. ROE. For the record, could you trace that for us?

Mr. POTTER. Yes, sir.

[The following was received from Mr. Potter for the record:]

The Migratory Bird Conservation Commission approved establishment of the Pea Island National Wildlife Refuge in 1935. The refuge was actually established May 17, 1937, with purchase of the first tract of private land. Most of the balance of the refuge was acquired in 1937 and 1938. A total of 5,859 acres has been acquired. In 1938, Executive Order 7864 also transferred 56 acres to the refuge from the Coast Guard. The refuge totals 5,915 acres.

Mr. ROE. How did it come about? Was it purchased by the Federal Government? I think that is important for my next question. That was in 1938?

Mr. POTTER. Yes, sir.

Mr. ROE. Was the fishing industry operating before 1938, to your knowledge?

Mr. POTTER. I believe they had an inlet fishery operating out of Manteo in the early part of the century. I do not think they were fishing offshore at that time.

Mr. ROE Is someone going to testify here today from the fishing industry? Well, would you keep that in mind? I was to get into that issue.

The question is, in part, what is the history of this? Has fishing been carried on for 100 years or 50 years—for 409 years? I would check that out.

Mr. POTTER. I can give you a little bit of historical perspective.

Oregon Inlet did not exist until 1846. At that time, a hurricane came through and blew out what is now Oregon Inlet. It has been migrating since that time. The actual jetty project has been discussed as early as, I think, the late forties. It was not, however, authorized until the 1970's.

Mr. ROE. However you discuss that somebody is going to resolve this. I do not know that anybody is here of that nature but, be that as it may, we want to trace the history. I think that fundamentally when we have the confrontations we hope to think that this committee has the ability to make initial solutions to the corps. We are not getting any place if we wait 30 years to decide something. It is a very significant point here that is used for fisheries' purposes. I am very much environmentally oriented myself, but I am also concerned that when I read that six or seven people lose their lives, that has a bearing. Human people are part of the environment, too.

Mr. POTTER. Absolutely.

Mr. ROE. Now, having said that——

[Applause.]

Mr. ROE. Now, please.

Having said that, another point you make, you have not gone along with the corps' solution up to this point so that you do not say that you are totally opposed to the issue either. You are waiting for a decision.

Mr. POTTER. That is correct. There has been a long exchange of correspondence between the corps and the Department. Prior to the introduction of this legislation, we were waiting on the submission of additional economic information, the final supplement to the final environmental impact statement and the final design memoranda, feature design memoranda I believe they are called, on the bypass system. Those materials are still not available.

Mr. ROE. I understand.

What we are basically saying is that as far as the Department of Interior is concerned, all evidence is not totally gathered yet?

Mr. POTTER. That is correct.

Mr. ROE. Therefore the Department of Interior is entering into the discussion today and the negotiations with an open mind; or has it already been foreclosed?

Mr. POTTER. In terms of our current management authorities, we do not have authority to issue permits for jetty construction on the seashore and refuge, so we are not able to go along with——

Mr. ROE. You are not?

Mr. POTTER. We have an open mind on the legislation that would give us such authority.

Mr. ROE. I am a fellow citizen with you. You are sitting on that side, I am sitting on this side. You are making certain pronouncements. They almost look like they are given, and you are saying that:

> We conclude that the proposed project would create conditions, including accelerated erosion, that would significantly alter the refuge environment, resulting in the deterioration or elimination of wildlife habitat and certain wildlife-related public

uses. Canadian geese, snow geese, the black duck, gadwall, redhead, whistling swan, many types of shorebirds, and the threatened Atlantic loggerhead sea turtle would be affected by jetty construction.

But, in your testimony, you, as I understood you, and correct me if I am wrong, you mentioned that the Atlantic loggerhead sea turtles have been viewed in the area? That is what you said.

Mr. POTTER. I believe that is correct.

Mr. ROE. I think, and I do not mean this unkindly or unfairly, but the way you have written it down, I want to be sure that you are correct on interpretation. You made a flat out statement saying if that project were to go ahead, that these are the things that would happen.

Now, on what basis is that based?

Mr. POTTER. Well, the one thing that we do know, I think, is that even if bypassing is successful, and we are not sure it will be, we have some questions about it. It has never actually been tried in this kind of environment, and the floating breakwater is also experimental, I believe it has never been actually put into use. Even if bypassing is successful, the bypassing would not be akin to beach nourishment. You would have, during certain times of the year, dumping of massive quantities of sand on sections of the beach, and we do not know how that would occur for sure. That is what these feature design memos are all about. That will certainly affect bentic organisms in the beach if that quality of sand is dumped on the beach areas. These are wildlife areas, they are resting areas for shorebirds, and so the whole food chain could be affected, but we are not——

Mr. ROE. Could we? Could we? You did not say would we.

Mr. POTTER. I could defer to the biologist to give you further information on that.

Mr. ROE. Let me try. I am not pinning you down, but I think we have to get to it, otherwise we are going to have a hearing and somebody is going to make an arbitrary decision. We are responsible in this committee to do all of the work that has to be done in America vis-a-vis the decisionmaking patterns as to how we balance the environmental relationship to man's existence. We are responsible for that. The committee is enormously responsible, as far as environment is concerned, because we share the same concern. But we have also looked behind many people making statements. They are just not accurate necessarily, and our job is to pin that down. So the way we have started to come to grips with that as far as this committee is concerned and the full committee is concerned is that the corps is the central agency. It deals with all the other agencies coming to environmental decisions, and they are environmental decisions, that is, the following: for years there has been controversy on the beaches in Florida, what do you do about the nesting places of sea turtles? And then when we got into that issue, we determined that the turtles are not there 365 days a year. They climb up on the beach and they lay their eggs, and they go back into the sea. It was a Solomon solution. When are the turtles going to be there? And I am not being facetious. So the turtles are there at a certain period just as the Sun shines and the Sun sets. So there will no nourishing on the beaches during that period—it was

a very sound, logical conclusion. My God, it will work. For years that has been in force, and so forth, and so on.

What I am trying to say now is is what are the facts? You know, I happen to know in my State, for example, we have a major problem in my own area where I live. We have not had any geese in that area for 50 years. Now we are inundated with geese on our golf courses. We love them. They are beautiful. And we have made arrangements—I am not talking just one or two, three, or four, I am talking thousands of them. So when one comes back and speaks to the turtle issue, there is nothing for us, that tells us, nor does your testimony tell us, that what we are planning on doing is trying to destroy the turtle population. We are not saying that. And I am not totally convinced that the geese are going to land there, whether there is a jetty or not. We have jetties in New Jersey and they land there. Somebody has to tell the geese.

So what I am trying to get at is if we are looking for a solution to the issue, then we have got to talk about more compatibility of the environment, what should we do. Now, the corps has testified, No. 1, and you might want to refute that, that if we do nothing, natural erosion takes place. Three things they testify to. One, where those side hopper dredges they are dumping the material, at least as I understood it, onto the sides of the area anyway. That is No. 1.

No. 2, according to their testimony, that there is a natural erosion taking place ebbing and flowing through that whole channel.

And, third, the channel was not even there until God decided that he was going to put the channel in. Again I am not being facetious. I am trying to be analytical.

Who is talking to the fish and the birds? Think about that a little bit.

What we are coming back and saying, we have to evaluate this issue. What is there a solution to?

Mr. POTTER. Well, we have enough questions at the present time, based on the lack of information that we had an understanding with the corps that we needed, so that we have some concerns about the jetty program. We feel that dredging is an alternative that we can support, and I think in that regard we differ from the corps.

Now, this past year has seen dredging for the first time in what you would call, I guess, an intensive manner. I do not know if it is as intensive as Mr. Vallianos is talking about or not, but I know that for the first time down there they had a fairly successful year, and that is in the wake of a tropical storm that went through in September. We, in the dredging proposal that we submitted to the corps, suggested the dredging approach with near-shore placement of dredged material. The studies that were done on the dredging activity assumed, in the models, that they would dump the dredged material in 17 feet of water. We have some question about whether it is necessary that you dump in that depth of water. I think the assumption was that you would have fully loaded dredges, and I do not think you need to have them always fully loaded. We felt, and we stated to the corps in our correspondence, that this type of dredging needed a full test. Until we see that test, and see that it is not going to work, we do not feel that, under current circumstances, we can take a position.

Mr. ROE. I am not asking you to change your position. What we are trying to get at is you have not closed your mind?

Mr. POTTER. No, not at all. No, sir. As late as the middle seventies, the Park Service was in favor of this project. I think the record should reflect that. At that time, the advanced engineering design material began surfacing which indicated the kind of things which were subsumed in that jetty proposal and that is when the environmental concerns began to come to the surface.

Mr. ROE. So the project has been approved over the 1970——

Mr. POTTER. It was in the Rivers and Habors Act of 1970.

Mr. ROE. 1984, and we still do not have a solution.

Mr. POTTER. That is correct.

Mr. ROE. Information will come to us at that point and then we will have to make some other decision. See, this committee has been gutsy enough recently to make a decision where we have an environmental confrontation. The only solution was to spend additional money. We do not have the right to spend $25 million and piddle it around. We have to make some kind of a decision.

OK. I have no further questions.

Mr. Rowland.

Mr. ROWLAND. It might be helpful to go back to the statement you made a few minutes ago about increasing accelerated erosion.

Could you show us on the map where the increased erosion is?

Mr. POTTER. I might have Bob do that because he is more familiar with that area than I am.

Mr. MCCUE. Most of it would be in the first 3 to 5 miles of the Pea Island Refuge. That is basically what the coastal engineers whom we work with are telling us. In this area we have three freshwater management ponds on the island that are managed for geese and waterfowl, and there is the possibility that if the bypass does not work and this erosion does take place, we could get a washout in those freshwater ponds. So that is where most of the concerns are, plus there is a flood tide delta back in this area at the northwest tip of the refuge. This is a very shallow area with extensive shoaling, and eel grass beds that are used by Canada geese, and also as a nursery area for fisheries. We anticipate that, with the jetties, that area would be diminished.

Mr. ROWLAND. Then the Corps of Engineers in their testimony said if the bypass was to carry the sediment now and put it in an area, you talked about erosion taking place out beyond 5 miles.

Mr. MCCUE. Yes, but we are not convinced that that bypass is going to work because it is based on several experimental concepts, especially the floating breakwater. So we are just not sure it is going to work. If it does not work, we are going to have massive erosion of the refuge.

Mr. POTTER. More than that, Mr. Rowland, we do not have the final information on how the bypassing system will work, and that is something we still need to see, I think, to understand exactly what the impact will be. I think our problems basically center on the fact that we do not know about this system. We do not know enough to really make a judgment. And that is where we stand.

Mr. ROWLAND. And since you do not know, you are prone to——

Mr. POTTER. Well, because of the Refuge Administration Act that dictates how we manage refuge areas, we are in a position where we have to opt for the environmental concerns.

I think it ought to be put in perspective how this thing has come about. Congress established Cape Hatteras in 1937, I think, and Pea Island was also established in 1937, and then in 1970 the authorization for this project occurred. Unfortunately, when that authorization was passed, there was not any land dedicated to build the project. I think that was an oversight, and we have all been wrestling with this problem since. And I think in fairness to everybody, we are all trying to resolve this to the benefit of the folks down there, but we simply have to turn to Congress for clarification as to which way we ought to go.

Mr. ROE. Would the gentleman yield?

Mr. ROWLAND. Yes.

Mr. ROE. This project is new to us at the moment. So we have to look at the agencies that have the expertise to give us this information.

For example, one thought that just occurred to me that that the corps talked about it being 4,000 feet wide and that it ebbs and flows naturally. And the confrontation lies in the point of view where the corps has pinpointed the areas for the construction of the jetties is they have to pinpoint it on refuge lands. The question, when the land was conveyed to the Federal Government, was it also conveyed to underwater land surrounding the area?

Mr. POTTER. I really do not know.

Mr. ROE. It is an important issue because then one comes back and says that the land is there visually it does not mean that they could not shrink that down and let us take 4,000 feet. It could be built in the water is what I am getting at and you would not need a permit.

Mr POTTER. I have just been told by Dr. Gogue that about 1,000 acres of land are underwater.

Mr. ROE. Well, we want to know that specifically for the record.

Mr. POTTER. We can give you the specific numbers.

[The following was received from Mr. Potter:]

Cape Hatteras National Seashore includes 3,263 acres of submerged lands. Pea Island National Wildlife Refuge contains no submerged lands.

Mr. ROE. Any further questions? Mr. Stangeland.

Mr. STANGELAND. Yes.

How many miles of shoreland on the Atlantic are sanctuary for geese, ducks, swans, et cetera?

Mr. POTTER. I would have to turn to Bob for that.

Mr. MCCUE. I am not exactly sure how far. There is about 12 to 15 miles in the Pea Island refuge.

Dr. GOGUE. Cape Hatteras National Seashore is 70 miles——

Mr. STANGELAND. How much of that coastline is refuge, not just the Federal Government wildlife refuge? The goose does not know a Federal wildlife refuge from the land out there. This is a place to feed and rest. So how many miles do you have in that coastline?

Mr. POTTER. We will have to provide that for the record, Mr. Stangeland.

Mr. STANGELAND. It is substantial?

Mr. POTTER. It is, yes.

[The following was received from Mr. Potter:]

Along the Atlantic Coast there are 447,000 acres in 40 National Wildlife Refuges and 325,000 acres in 13 National Parks. The Atlantic States also have State refuges and parks along the coast, however, we are unable to identify how many or how much acreage is involved. Not all of these lands have been acquired to perpetuate habitat for wildlife species; park lands, for example, are generally acquired for more direct human recreational benefits, which may or may not involve the protection of valuable wildlife habitats.

In 1975, an additional 500,000 acres of unprotected waterfowl habitat along the Atlantic coast were identified by the Fish and Wildlife Service as part of their migratory bird conservation program planning process, of which 112,000 acres were recommended to be acquired. The study noted, for instance, that between 1950–1969, 84,500 acres of black duck habitat were lost due to dredge and fill activities. Since the 1975 study, it has been recognized that the black duck populaton has decreased significantly. One reason for this decline is attributed to the continued loss of habitat along the Atlantic coast.

Mr. STANGELAND. And, of course, I am a goose hunter and a duck hunter and I believe in habitat.

Mr. ROE. Not out there——

Mr. STANGELAND. No, I am a Ducks Unlimited member and so I believe in providing habitat and sanctuary so that we have those birds migrating north and back.

Mr. POTTER. We have appreciated your support in that area for many years.

Mr. STANGELAND. I guess what I am saying is that I share the chairman's concern of trying to find something that is compatible to all and as compatible as possible.

Do the regulations of the Department of Interior preclude indeed compatible activity even if there is no alternative to that?

Mr. POTTER. Yes; the Refuge Administration Act would, preclude activities that are found not to be compatible with refuge purposes as I understand it.

Mr. STANGELAND. I go back to——

Mr. POTTER. The question of compatibility is something that can be contested. I mean it is a standard that has no specific statutory definition. It appears in the Refuge Administration Act and it has been subject to litigation. There are a number of court cases on the question of compatibility so it would be something that would be triable in court.

Mr. STANGELAND. If the sand bypass system works, then would the project be compatible to the wildlife activity?

Mr. POTTER. Well, there is a major question, and that is the question of how the beach nourishment would occur. We have been told different things at different times. It appears it is not clear whether the Corps would do the bypassing all at one time, whether they would do it over a period of months, how often they would do it, or what. Potentially, there could be a large pile of sand on the beach that might affect, as I said, the beach and the organisms and the food chains. That is the question we have. Again we would not be able to answer that until we see the feature design memorandum which says exactly how sand bypassing is going to occur.

Mr. STANGELAND. Can you explain something to me with the jetties—and I gather from that map we are looking in the right-hand corner, northerly direction to the southerly direction.

Can you explain to me why there is going to be accelerated beach erosion 5 miles down the shoreline with that jetty in there?

Mr. McCue. When the downdrift currents hit the jetties, the sand they are carrying will drop out. Now, in normal circumstances, that sand is carried on down the beach and some of it drops out, as it is then going down, it picks up other sand, it carries a load. But what happens is that that current will drop the load out on the north side of that jetty. The currents will then pick up another load on the southside of the jetties without dropping any out.

Mr. Stangeland. There is a constant eroding.

Mr. McCue. Right. So when the currents come down on the other side, they do not have a load and they will actually pick up the sand and replenish the load that they were carrying and take that sand on out. There would be no sand coming in from the north to replenish the refuge beach.

Mr. Stangeland. Were the freshwater ponds you speak of indeed natural or were they established to provide goose habitat?

Mr. McCue. They are diked.

Mr. Stangeland. They were manmade and not natural?

Mr. McCue. Yes; they were salt marshes at one time. They were diked to make freshwater ponds.

Mr. Stangeland. I guess you have answered most of my questions. I think my questions have been answered in your testimony.

Mr. Roe. Let me ask you this. I can see the picture. I am looking at a road map. This Route 12 is constructed apparently quite some distance through there?

Mr. Potter. Yes, sir.

Mr. Roe. So what we are saying is in candor we do have a major intrusion of that highway.

How busy is that highway? Is it used a great deal?

Mr. Potter. We could supply the figures. It is well used.

Dr. Gogue. We have about 2 million visitors a year at the Cape Hatteras seashore.

Mr. Roe. So there are people, trucks and automobiles coming in and out. I envisioned in my mind initially that this might be Barrier Island, but that is not the case according to this. And really when we look where the Oregon Inlet is, there is just not any other way we could go way down south, et cetera.

It appears to me that we are looking at Pamlico Sound. What is the depth of that? Is it very deep?

Mr. Potter. Pamlico? It is shallow.

Mr. Roe. Is there other dredging that takes place, vessels in there?

Mr. Potter. I cannot answer that question, Mr. Chairman.

Mr. Roe. Somebody probably can.

Mr. Potter. Yes, sir.

Mr. Roe. So therefore I assume there is boating that takes place in there?

Mr. Potter. Oh, yes; yes, sir.

Mr. Roe. Then let me ask this question.

Your concern, it appears to me is what Interior and the corps will do regarding the potential erosion on that section of Pea Island, and what they are going to do to the habitat. Is that fair?

Mr. McCue. We are also concerned with the timing of the placement of the beach nourishment sand.

Mr. Roe. That is a process. It is not negating that inlet. It is a process of how it works is what you are testifying. This is what I am hearing today.

Let me ask the next question. When people go to Oregon Inlet and they bring their boats there—maybe Mr. Vallianos knows, can answer this, where do they go? Do they go up and down the sound? Are there channels in there that they use?

**MR. VALLIANOS—RESUMED**

Mr. Vallianos. There are channels from the main body of the water which centers roughly 15 feet in depth, but along the fishing shallow areas, it can be dry at times, two and three feet deep, and there are various channels that serve the—many fishing villages that are on the periphery of that big bay area.

Mr. Roe. Do they continually dredge? Do they dredge material?

Mr. Vallianos. Yes, there is quite a bit of dredging in the overall sound area.

Mr. Roe. Now, let me ask the next question. This is a question I wanted to ask.

What about cutting a new channel through?

Mr. Vallianos. The barrier?

Mr. Roe. Yes.

Mr. Vallianos. That is quite an interesting possibility. There is one problem with it, and that is the habitat above Pamlico Sound. It is a bay area, is brakish to freshwater, and it has its own kind of blight forms. Many times it has been proposed by local interests that a new inlet be cut north of Nags Head somewhere leading into what is known as a body of water called Curry Sound—I do not know if that is shown on that map or not. However, each time such an inquiry has been made or alluded to, there have arisen some large objections concerning the construction of that environment by turning it salty to the opening of a new inlet. And we kind of——

Mr. Roe. If the gentleman will yield. We just got done saying that Oregon Inlet is formed naturally anyway.

Mr. Vallianos. That is right.

Mr. Roe. So when the good Lord said he was going to put an inlet in there, he did. Now whether it is brackish or whatever.

Is it not reasonable to say if we get a tremendous storm, it is very possible to wash right through those islands some place?

Mr. Vallianos. Absolutely.

Mr. Roe. So that is not totally without some kind of consideration. I just cannot help but look at that. OK.

I do not have any further questions. That is fine.

What I am gathering from you folks is that, OK, your mind is open. We do not feel that we have enough information as yet to make the determinations, and that information will be forthcoming, as the corps testified in June. Is that correct, thereabouts?

Mr. Potter. That is what I understand, with respect to the economic reanalysis.

Mr. ROE. Is there any other environmental data that is going to be forthcoming? Who is going to provide that?

Mr. POTTER. There are three different things that we need. We need to see the supplement to the final environmental impact statement, the design feature memoranda on the bypass system, and then the economic data, the reanalysis of the economic data which I am sure will be discussed in some detail.

Mr. ROE. Let us take that. That is something else. Can we go through that a little? Mr. Stangeland?

Mr. STANGELAND. When will this information be available?

Mr. POTTER. I do not know, Mr. Stangeland. You would have to ask the corps because, the last that I knew, we were going to have the final supplement on the FEIS in May of 1983. I do not think we got it. In fact, I know we did not get it and we have not—I do not know what the current timetable is on that.

Mr. ROE. Does the corps have any word on that?

Mr. VALLIANOS. Yes, sir. The delay in routing the whole final design supplement phase to general design memorandum, the supplement of the environmental impact statement that have been referred to, is the problem with this economic reanalysis which, as has been stated, will be completed by June of this year, end of June, and these documents require some inclusion of that economic information. The environment, supplement to the environmental impact statement, et cetera. So they are awaiting that economic reanalysis for inclusion of economic information, and the other documents before they will be routed for review, say, through the Department of Interior.

Mr. ROE. When do you expect that to happen?

Mr. VALLIANOS. Well, let us say very shortly after June of this year.

Mr. STANGELAND. Do I understand that Mr. Vallianos has said that the environmental studies have been completed but they have not been merged with the economic studies?

Mr. VALLIANOS. That is correct.

Mr. STANGELAND. Could the environmental studies be released since the economic studies are available?

Mr. VALLIANOS. I cannot answer that, Mr. Congressman, because I do not know what the legal requirements of these environmental impact statements are, that they must embody at least some portion of the economic——

Mr. ROE. If the gentleman will yield. He is hitting a very important point.

The purpose of our taking our time this morning is to try to get the facts. In order for us to be able to make some kind of a decision, that is what everybody is hunting for today.

What are we going to do? We are trying to elicit the facts: Again we are not nailing anybody down.

But the question is there, if there is environmental data, I do not understand why we follow the process of having to do certain things and then react to them. It seems to me that the Department of Interior also has a responsibility vis-a-vis their own approach to the situation. In other words, you are reacting to what the corps is going to do. We are talking about an expenditure estimated, as I recall, of $98 million. We are talking about an expenditure already

made of $25 million, which is not satisfactory according to your testimony vis-a-vis the impact and health and safety and so forth. So we have to do something. Every minute we delay, every week we delay, we are wasting the taxpayers' money, in my opinion.

Now, why can we not go and say, hey, look, if there is an environmental scheme, so to speak, put together, that should be given to the Department of Interior immediately to start your review. Because let me say this and set you free, that the cost of benefit ratio is so much full of smoke anyway. It does not mean a darn thing. We have been through that. So as far as that is concerned, that is not the issue. The issue is if we are going to have any fishing whatsoever, and we will continue and wait until we get that testimony later. No. 1, we have to do something.

Now, we are coming back and saying, well, why should we wait until June if the environmental data is available? Why do we not give it to the Department?

Mr. VALLIANOS. Let me just shed some light on that, Mr. Chairman.

The only—the main point of this new supplement to the environmental impact statement addresses itself to, is this question of jetty spacing, which someone may have some question whether that merited a supplement to an environmental impact statement.

But this time lag that has resulted in this project, excrutiating jumble of issues that have come through, this inlet has changed drastically.

Now, what we are interested in, if we get a clearance, a congressional action, or whatever, to construct this structure, that we will be able to adapt the structures to the site condition at the time of initiation of construction, and we do not want to settle and say we are absolutely, without question, going to settle on a space of say 2,700 feet, only to find out when we start that nature has come along and blown out 3,000 feet of this beach, and then someone says you have not got a permit to build at a space, even 4,000 or 3,500.

So we have got this range of spacing, and the primary issue addressed by that supplement to the environmental impact statement is not all the question of the impact on the beaches, that has been addressed in the previous environmental impact statement.

The wildlife issue has been addressed. Really, what we are addressing is the question of how things may change with relation to this jetty spacing. That is the major issue. So I would say that most of the documents pertain to the question of environmental impact are already in, they have already been addressed, and readdressed by our office.

So those things are really not new, or will be coming through this new supplement to the environment.

Mr. ROE. If the gentleman would yield. From your perspective, we are coming back and saying the following and trying to get to the point.

From your perspective that is how you see it, which is a given, that the jetty should be built. I do not mean that unfairly. But that is not what the Interior Department is saying. They are coming back and saying that there is other solutions that they are afraid may occur, or may not occur. They do not have the information.

Now, we have a chicken and egg. Some place that decision has to be made. The decision really is twofold, as I see it. How do we protect the fishing fleet, and provide the resources that they need to be able to get in and out in safety. What method do we apply to achieve that goal, and protect the outlet, as far as environment is concerned?

Now, this is one solution. So I would suggest that what we do, if what the gentleman is saying, Mr. Vallianos is saying, that you have that paper, then you are not going to get any new additional environmental data. The environmental impact statement is not going to have a solution to the problem.

What I would like the Interior Department to do, I do not know if you can make that commitment now, but I think we ought to take the environmental data that the Interior Department has now, and respond to that. If there is legitimate reasons, can the corps modify what has to be done in order to achieve your goal?

Can we do something different? What are the environmental areas that you are concerned with in the scheme that the corps has presented? Because if they are only going to be supplementing an economic statement, that is not going to give you any more additional information.

Is that a reasonable statement?

Mr. VALLIANOS. I think it is.

Mr. ROE. Unless you ask for more information.

Mr. POTTER. The feature design memoranda on the bypassing system, I think is crucial. At least that is my understanding, and I think we have not seen those latest figures.

Mr. ROE. Are they ready? Are they prepared?

Mr. VALLIANOS. They are not necessarily features. The feature design memorandum is a year from actually being a document. What we have are about 30 basic engineering laboratory and design documents, and next year is the preparation of the design memoranda. That is a technical matter, a question of a barge life, or assemblage of barge life features, that are towed to the site, moored, allow a barge to operate for a period of 1 to 2 months, normally once a year, to be disassembled and carried away from the site, there is no environmental information that is going to be associated with the feature design memoranda.

Mr. ROE. What we have done in these kinds of confrontations, we have approved a number of projects, and we made them subject to the resolution of the environment, economic aspect of it.

Now, this project has been approved. OK, that is No. 1.

No. 2, it is only the question involved as to whether or not they should use Interior land, and I am not so sure, and then we have to find out where the Interior jurisdiction lays vis-a-vis. You said there is a thousand, whatever that figure was.

As far as underwater was concerned——

Mr. POTTER. That is correct.

Mr. ROE. You are not opposing doing something, but we do not know what to do.

Mr. POTTER. That is correct.

Mr. ROE. So, if that is the case, then the corps is saying it is going to take them another year to get the design memorandum.

Then there is no reason that we should not consider this subject to further review, otherwise we are not going to get anything done.

What are you using for money?

Mr. VALLIANOS. We have no funding for fiscal year 1985. We have funding for this year, and there will be some transferrance of moneys into 1985, but there is absolutely nothing in the budget.

Mr. ROE. So if the project were approved, subject to this data, no construction could be done. You need something to break that up.

Mr. VALLIANOS. Yes, sir.

Mr. ROE. Any other questions for the gentlemen?

Mr. STANGELAND. I have a question.

You were referring to a floating jetty, and I would like to have you explain that system.

Mr. VALLIANOS. It is a floating breakwater, which is part of the so-called sand bypassing system, and I do not want to take the committee's time, in too great a detail, but may I say, without any breakwater, one can put out a dredge here, anywhere.

If you go to the North Sea, on the Belgium coast, you will see outside of the mode, extensive harbor breakwater, a dredge operating with no breakwater. They have a lot of downtime, they have to shutdown because rough seas come along, and they do not have production.

What we are trying to do here is a purely operational cost-effective way of sand bypassing, and this thing is so crowded by debate that we lose sight of the fact that without a floating breakwater we can bypass sand up here, either side, in any form, and whatever quantity.

The question is, how do you do it the cheapest way, and the cheapest way we have found in our studies, beginning with the U.S. Navy, and the Naval Civil Engineering Laboratory, may I comment, is not an effort of the corps, we have our laboratories that have worked on it, we have Naval Civil Engineering Laboratory that worked on it, and a number of consultants who deal in deepwater structures for the oil industry, who are behind this design, but the idea here is to—in order to minimize the cost, and shorten the time that we have to take up lands along the indigenous shorelines of the National Park Service, and U.S. Fish and Wildlife Service, the best way to do that is to provide some sheltering to that dredge, which will allow it to operate the longest period of time, and in the shortest actual dredging operation.

So these breakwaters that they referred to, floating breakwaters, are simply hauled to this site, from a mooring somewhere, are depioyed there, and they form a kind of shelter zone behind which the dredge can go, operate for an optimum level as they can in that environment, complete the operation, and move the whole thing, lock, stock and barrel.

There is not a question that bypassing can be done here, and that gets confused as to what exactly breakwaters are supposed to do.

I might add, again, the auxiliary sand bypassing system, which cannot even be considered experimental, since we have used the same thing at Cape Hatteras.

Mr. STANGELAND. I have a couple of last questions, Mr. Chairman.

The jetties should provide a certain amount of shoreline stability, back away from the jetty. And, how far would that be north, and how far would that be south? It is going to break the current that is eroding that shoreline, and then it will also deposit it, and certainly the force running against that jetty, so on from the north, is going to be blunted, so that there will be virtually no erosion from the jetty going north for a certain distance.

And, also it is going to take a while for that current to come around the jetties, get back to the shoreline, and start eroding again. So there is going to be some stability on that shoreline south of the jetty.

Has anyone figured out how long a distance that is, where you will preclude erosion with the jetty?

Mr. VALLIANOS. Yes.

Mr. STANGELAND. OK.

Mr. VALLIANOS. First, let me preface the comment by saying again we take no account in stopping the erosion here for the past 8 or 9 years, 12 acres per year. We do not know if that will continue, hence we take no benefits for it.

However, in evaluating this thing, I would say the most extensive sediment transport analysis ever made on the outer banks, and perhaps the only ones made of any significance, we considered a coastline reached 9 miles north and 9 miles south of this inlet, 18 miles of coastline.

The effect of these jetties, by the only scientific engineering studies that I know of in existence, by the way, would indicate that we stopped extensive erosion on Bodie Island here, in the amount of close to 6 acres per year.

As far north as an area called Cotina Beach, which is very much eroded on this Bodie Island.

Mr. STANGELAND. And how many miles would that be, about?

Mr. VALLIANOS. Mr. Congressman, I would think that is about—between 4 and 6 miles north of this jetty. And to the south here, for a distance over about a 3-mile reach, we will stop existing erosion, actual erosion, of about 2½ acres per year.

We are taking into account 8½ acres per year, land loss through the emplacement of these jetty structures.

Again, that does not account for the extremely high losses that would be stopped on the northern tip of the island.

Mr. STANGELAND. OK. One last question, and I am just thinking of an alternative.

A year ago in January I was in the Netherlands, and watched, or saw the project there, that was an attempt to prevent the ocean, or was it the Zyder Zee, come breaching the dikes. The dikes had been breached, 15, 18, 30 years ago?

Mr. VALLIANOS. 1953.

Mr. STANGELAND. OK, 30 years ago. And what they are doing, are they build these towers on land, and they have gates that go in them.

Is that all a feasible alternative to build a permanent breakwater, beyond the Oregon Inlet, for a mile north and a half mile south, whatever?

Mr. VALLIANOS. Like the Delta project gates.

Mr. STANGELAND. You would not stop the current going down the coastline, but you would break the wave action coming in.

Mr. VALLIANOS. Well, there would be a number of reasons why that would not be feasible here.

First of all, it is what the Dutch had to face up with the Delta project, and that is that they would develop, within the estuaries, a totally new environment.

Now, they do, through the use of these gates—some of those estuaries still keep salt, but a lot of them changed to essentially fresh environments. We would not want to change the environment of Pamlico Sound, because that in fact is the nursery area for the young larval forms, and young fish that have spawned at sea, and make their way to the estuary, grow to adulthood, and make their way back to sea.

So, actually we would not want to stop the exchange of ocean waters, just on environmental considerations alone. On physical considerations, the Dutch, through those gates that you saw, are really not concerned in the sea bottom, beyond the gates, for the carrying of navigation.

If you were to stop the exchange of tidal flow, you would really get shallow waters in that area. The sediment would tend to deposit. So such an idea would not be applicable to this.

Mr. STANGELAND. Thank you.

Mr. ROE. OK. Let me suggest the following for both Agencies—let me announce to the other witnesses we plan on breaking until 1:30. We have members who have things to do.

I understand that Secretary Summers is here, and you have a problem on a flight. Can you move that flight back a little?

Mr. SUMMERS. We certainly are going to try that.

Mr. ROE. I think what is important here and I know it is tedious, but you have to educate us, too. We want to hear everybody's views, and I have read your testimony, I think it is important testimony, so we just have to do that.

The second thing is if we have to do something, I would like to see the Interior Department and the corps collaborate.

The corps has presented what its view is, and we know that there is an experimental relationship involved here, with the entire inlet, what it should be, et cetera, et cetera.

And I would like to see the Interior Department now respond to the corps, and say this is what we think may happen, or could happen, and this is our concern.

What can we do to change that?

In other words, what can we do in the scheme that the corps is working on, that would alleviate your concerns?

Do you understand what I am trying to get at?

Now, because I think that part of the concerns that you did express strongly was the building up of the excretion, so as to speak, of that whole section along there. That would affect the fresh water pond, which seems to be part of the substance of what we talked about.

Converse to that, I think that what the corps has spoken to, is that there is natural erosion, taking place in that area, namely, that section of Pea Island. I believe that you spoke to that. What does all that mean to Interior?

Can it be that we do make this public investment, and can we be improving the environmental relationship down there, rather than getting into a total all-out war?

Do you understand? And then what timeframe? You are coming back and saying that the design memoranda has an important aspect of that. I think that can go along if we can get the criteria established by the Interior Department, specifically what the concerns are, and what mechanical adaptations of the corps can make to accommodate those.

For example, it comes back to my judgment, if we are going to pump material, maybe that is not what we should be doing. We should be pumping it out to the sea. So I do not know, it is certainly worth looking into. If that is what the legitimate concerns of the Interior Department is, the excretion. Does that have any merit?

Mr. POTTER. Certainly and for the record, Mr. Chairman, you may be interested in a letter that was sent to then Colonel Hughes, the District Engineer, on April 29, 1983. It is a multipage letter, single spaced. It is about 6 pages long, and it details with great specificity our concerns in both areas. It was intended as input for the supplemental EIS. I think it would suffice in raising the questions, the very questions that you are asking that we should raise.

Mr. ROE. Let me ask, has the corps seen that?

Mr. VALLIANOS. Mr. Chairman, I cannot respond to that. What answers have been furnished, I would certainly be glad to furnish.

Mr. ROE. Well, what I am trying to get at is it is not just a question of responding to the corps. The question is what does the Interior Department think we should do? In other words, if the Interior Department comes back and says these are the list of particulars we are relating to, we do not want them done because we think this is going to happen. That is going to narrow the decision process down to the corps.

Mr. POTTER. I think what this was was input for their draft supplemental EIS so that they could address all the environmental concerns. It could also be couched in the nature of explaining our concerns and raising questions. I do not think that we necessarily expected a response from the corps because it was input to them. But I think if we got a response, we might have the answers that you are alluding to; that is, what our concerns are, and how they could be addressed in designing this project.

Mr. ROE. That is communication.

Mr. POTTER. So if we are able to sit down with the corps and get some answers, I think we could probably be more helpful.

Mr. ROE. Then what the committee ought to do is to get in touch with the proper authorities and suggest that that take place immediately so that we have the corps and the Interior Department working on a resolution to that.

For example, hypothetically speaking, if you do not want that material on the beach, we put a line out and pump it out to the sea? I do not think that is the end of the world. I know you speak to cost, because that is part of the issue, but many of these issues are not going to be decided unless it costs somebody some money to do it. Reasonable. Somebody has to make that decision. All right.

Mr. POTTER. Would you like to have a copy of the letter?

Mr. ROE. Yes, very definitely. We ought to put it in the record. Do you have a copy of that?

Mr. VALLIANOS. I am sure it is in the office.

Mr. ROE. Let us make a couple of copies of it. So, no objection—what is the document so we can identify it for the record?

Mr. POTTER. It is a letter, dated April 29, 1983, to Colonel Hughes, District Engineer in Wilmington, N.C. It is signed by L. K. Gantt, Field Supervisor for the Fish and Wildlife Service, and it addresses, in six single spaced pages, all of the details of the concerns that we have, that we would like to understand how they are going to be addressed in this project.

[Letter referred to follows:]

U.S. DEPARTMENT OF THE INTERIOR,
FISH AND WILDLIFE SERVICE,
*Raleigh, N.C., April 29, 1983.*

Col. ROBERT K. HUGHES,
*District Engineer, U.S. Army Corps of Engineers, Wilmington, N.C.*

DEAR COLONEL HUGHES: This responds to your letters of August 24, 1982 and April 1, 1983 requesting impact assessments for use in your agency's Supplement II to the Final Environmental Impact Statement (EIS) for the Manteo (Shallowbag) Bay, North Carolina project. As requested, the following comments are limited to anticipated impacts to Pea Island National Wildlife Refuge (NWR) which are expected to occur as a result of modifications to the selected (jetty) alternative. These modifications are described in your August 24, 1982 letter. Our comments do not address the acceptability of the project or the proposed modifications.

We are unable to provide detailed impact assessments in those instances where specific hydrological and geomorphological responses to the proposed modifications are not provided. We also wish to note that detailed information regarding construction modifications involving changes in maintenance dredging needs, changes in the length of the construction period, changes in the size, and location of the construction staging area, and the occurrence of sand bypassing (if any) in connection with the newly proposed construction sequence were not available. If additional information concerning these construction activities and the expected response of the area's geomorphology to the modifications are provided, at that time we will be pleased to identify more fully the expected biological responses and effects on refuge operations.

The range of proposed modifications could result in a project which is noticeably different from the earlier design. Jetty positioning and spacing is unknown at this time as is the degree of inlet channel migration which will result from the staggered construction sequence. Further, the Service and the Department of the Interior continue to believe that the jetties could cause the severe erosion of lands under our stewardship. Based on these concerns, we believe that the Supplement II to the Final EIS must include a worst-case impact analysis in accordance with Part 1502.22(b) of the National Environmental Policy Act regulations. We will be willing to assist you in this effort upon request.

Our decision to provide this information does not change the Department of the Interior position that the revised economic analysis and dredging alternative must be provided for our review prior to the preparation and release of the supplemental Final EIS. That position is stated in Assistant Secretary of the Interior G. Ray Arnett's October 8, 1982 letter to Assistant Secretary of the Army William Gianelli and was established in view of Mr. Arnett's determination that the studies could lead to the development of an acceptable compromise position. Since this viewpoint is unchanged, it is essential that the Supplement II to the Final EIS not be released until the Corps' analysis of the dredging alternative and revised economic analysis are received and reviewed by the Department of the Interior.

The following specific comments regarding possible project modifications are provided for your use.

JETTY POSITIONING

Positioning of the south jetty will affect the size and configuration of the accretion fillet which is expected to develop behind that jetty. At its northernmost alignment approximately 1,000 linear feet of additional beach is provided when compared to the southernmost alignment. A more southernly alignment, as shown in the in-

closure to your letter, would proportionately reduce refuge beach front and associated recreational opportunities which are expected to develop with the original design. Similar gains in beach habitat are expected although they will be at the expense of the nearshore benthos. As with the original alignment, the site would be largely committed to construction and sand bypassing activities thereby excluding recreational use during the summer months. Accordingly, we do not view this modification as having impacts on refuge operations, use, or the environment which are significantly different than those previously identified in our review of the draft and final environmental impact statements. Any loss of oceanic nearshore benthic habitat associated with jetty positioning at this site is probably inconsequential due to the abundance of that habitat type and the transitory nature of its inhabitants.

Realignment of the proposed north jetty located on National Park Service lands could expose an extensive area of unprotected dunes and tidal marshes which border the inlet to induced shear and eddies thereby resulting in their loss to erosion. Although those effects would not directly impact Pea Island NWR, they would lower the area's overall environmental quality and would reduce available habitat for resident-migratory waterfowl and shorebirds of Hatteras and Bodie Islands. A list of these species is largely provided in Tables A-17, A-20 and A-21 of the July 1977 Manteo (Shallowbag) Bay Final EIS (U.S. Army Corps of Engineers 1977) which also describes other flora and fauna which will be impacted.

### JETTY SPACING

Jetty spacing, as with jetty positioning, will affect the size of the accretion fillet and, therefore, determine whether those lands will be submerged bottom or ocean beach. As stated above, it does not appear that significant changes in the size of the southern accretion fillet will occur with jetty realignment, and no new adverse impacts to the refuge ocean beach are anticipated in connection with the modification. Of greater concern is the effect of jetty spacing on the flood tide delta which borders refuge high ground, and the effect of jetty spacing on maintenance dredging frequency and subsequent disposal of dredged materials on Pea Island NWR. This concern is based on the fact that jetty spacing will determine current velocities and direction which affects existing shallow water habitat in the vicinity of Oregon Inlet. Since we do not know to what degree the area will change, we cannot accurately predict impacts at this time, and we suggest that the Corps develop a worst-case analysis (i.e., extensive erosion of the flood tide delta) in addressing this point. In any discussion of the effects of jetty spacing on inshore bottoms and existing wetlands in Supplement II to the Final EIS, the Corps should state that the flood tide delta, within the Refuge Proclamation Boundary and immediately adjacent to the land mass of the refuge, is important to the overwintering of Canada geese (Branta canadensis) and other waterfowl, such as Atlantic brant (Branta bernicla hrota), whistling swan (Cygnus columbianus), American wedgeon (Anas americana), black duck (Anas rubripas), pintail (Anas acuta acuta), bufflehead (Bucephala albeola), common goldeneye (Bucephala clangula americana), red breasted merganser (Mergus serrator) and redhead (Aythya americana). It should also be noted that there is special concern for the Canada goose in North Carolina due to declining numbers. The delta and associated shoals are primary feeding sites for a flock of approximately 5,000 Canada geese. If the proposed project alters or reduces the flood tide delta, a decline in the quantity and quality of available wintering habitat for these geese will result. Since most wintering habitat is heavily utilized in the vicinity of Pea Island, loss of the flood tide delta would probably cause those birds to seek alternate wintering habitat within the Atlantic flyway.

The flood tide delta is an important forage and/or nursery site for many finfish and invertebrate species including bluefish (Pomatomus saltratrix), gray and spotted seatrout (Cynoscion regalis, C. nebulosus), spot (Leiostomus xanthurus), croaker (Micropogonias undulatus), northern and southern kingfish (Menticirrhus saxatilis, M. americanus), summer flounder (Paralichtys dentatus), blue crab (callinectes sapidus) and others. The nursery value of these shallow water habitats is greatly enhanced by Oregon Inlet which serves as a major migration route for juvenile and young-of-the-year fishes which must move between the Atlantic Ocean and North Carolina's vast estuarine environment. The flood tide delta is also the site of considerable natural marsh building and of primary productivity associated with marsh and benthic micro algae growth. These values are discussed in great detail in the Service publication "The Ecology of Intertidal Flats of North Carolina: A Community Profile" (Peterson and Peterson 1979).

Assuming that increased jetty spacing will reduce flow control and thereby increase the need for maintenance dredging, dredged material disposal on refuge

lands will increase. The impacts of spoil disposal on the refuge has been fully discussed by the Service's Compatibility Statement Regarding Issuance of a Department of the Interior Permit to Construct Jetties and Place Dredged Spoil on Pea Island National Wildlife Refuge (Appendix A). The Corps should refer to that report for a discussion of anticipated impacts associated with dredged material disposal on refuge lands. Generally, it is our position that with increased dredging and disposal, the opportunity for adverse impacts to fish and wildlife resources, such as the elimination or disruption of sea turtle nesting, will increase. Any additional noise associated with dredge booster pumps and pipe laying equipment could disrupt wildlife resting and feeding if performed during the peak waterfowl migration months of October through March. Of particular concern in this regard is a small flock of about 300 lesser snow geese (Anser c. caerulescens) which feed in the dunes and rest on the beach.

Elimination of mole crab (Emerita talpoida) and coquina clam (Donax spp.) from those expanses of beach where sand is being deposited would reduce their availability as food for such shorebird species as gulls, terns, black-bellied plover (Pluvialis squatarola), ruddy turnstone (Arenaria interpres), whimbrel (Numenius phaeopus), willet (Catoptrophorus semipalmatus), knot (Calidris canutus), semi-palmated sandpiper (Calidris pusilla) and sanderling (Calidris alba). A complete list of shore birds is provided in Table A-17 of the Manteo (Shallowbag) Bay Final EIS (U.S. Army Corps of Engineers 1977). With closure of the beach at Pea Island NWR to off-the-road vehicle traffic, increased bird usage has been noted. Such use, and the potential for shorebird nesting on the beach, will be reduced further or eliminated if project modifications result in increased beach disposal at Pea Island NWR. Similarly, the nearshore fishery could be affected adversely if increased dredged material disposal reduced mole crab and coquina populations as observed by Reilly and Bellis (1978) in connection with beach disposal at Atlantic Beach, North Carolina. These effects include the loss of food species which are utilized by finfish of commercial and recreational importance, reduced public recreational fishing opportunities and degredation of Pea Island NWR's natural setting, with increased pipeline routing and related equipment operation.

### CONSTRUCTION SEQUENCE

Changes in the construction sequence will alter sand bypassing needs and significant beach erosion will occur if sand movement around the jetty(ies) is not continually provided during and after construction. As with the positioning and spacing of the jetties, the construction sequence will affect channel maintenance needs and the frequency and volume of dredged material disposal on refuge lands. These impacts, which are discussed above, would be altered by some undetermined degree which correlates to unknown changes in required maintenance.

Once specific frequencies, quantities and disposal periods are determined, our assessment of potential environmental impacts to Pea Island NWR can be made.

Finally, we see no means by which the modified staged construction approach allows sand to be moved around the south jetty since the north jetty, the floating breakwater and the northern accretion of sand (fillet) will not be available. Therefore, in order to respond to your needs, we request that you address, in detail, the sand bypass needs and the plan of action proposed by the Corps to provide erosion protection using the staggered jetty construction approach.

### FISHING WALKWAYS

The proposed changes in the lengh of the fishing walkway would not significantly affect Pea Island NWR. The original south jetty design calls for a fishing walkway 4,000 feet in length. Since maximum possible repositioning of that jetty would increase the walkway length by 200 feet, additional opportunity for recreational fishing is possible. Due to lack of design and construction information, we cannot predict user day benefits, if any, at this time since the degree to which the jetties will be used for recreational fishing is not known. This modification is not expected to alter the Service's concerns regarding management problems on the refuge with regard to visitor use of the jetties. Inasmuch as it appears possible that the Corps of Engineers may have jurisdiction over the jetties and associated project lands, the supplement should provide a detailed management plan for these structures and lands. That plan should include possible impacts to all Department of the Interior lands and related management activities.

ARMOR UNIT TYPE

Since it may be difficult for people to envision the proposed structure, we recommend that such a unit be illustrated in the supplmental Final EIS. It is likely that the use of concrete dolos, as is currently proposed, will be less aesthetically pleasing, from a natural perspective, than a natural stone unit. This will detract from the present, relatively natural inlet setting. Assuming that the use of concrete dolos will not significantly change construction time, space and maintenance requirements, no other environmental consequences are anticipated as a result of this modification. The nine acre natural pond located at the north end of the refuge is in close proximity to the construction site and could be impacted if additional use of the construction staging site is required. This pond attracts both puddle ducks and diving ducks. During the construction phase all waterfowl use will be essentially eliminated from the pond resulting in the loss of nesting and foraging habitat for approximately 50 species of shorebirds, songbirds and waterfowl.

CREST ELEVATION

Proposed changes in crest elevation from a range of +10.5 to 18.0 feet mean sea level (m.s.l.) to range of +8.0 to 9.5 feet m.s.l. should have no noticeable adverse impact on Pea Island NWR. This determination is based on the assumption that the lower elevation will not result in frequent wave overwash which could limit fisherman use.

ENDANGERED SPECIES

Any increase in the duration and magnitude of dredging and dredged material disposal, jetty construction and/or modification of existing habitats, however, could further increase anticipated adverse impact to endangered species.

Atlantic loggerhead sea turtle (Caretta caretta caretta) nesting is more common on the refuge beach than on other portions of Hatteras and Bodie Islands. Sea turtle nests found on unprotected beaches are relocated onto the refuge beach as a part of the ongoing management of that species. Since 1972 over eight thousand hatchings have been reared and released to the ocean from this beach. Based on this high degree of refuge involvement in the protection and preservation of this species, any project modification involving increased heavy equipment movement, pumping, and deposition of large quantities of sediment could potentially effect turtle nesting. Probable impacts include nest destruction through being crushed by heavy equipment and burial with dredged materials, disruption of nest selection due to dredge and disposal related activities; and hatching loss caused by entrapment in tire track ruts.

The fall peregrine falcon (Falco peregrinus) migration could also be impacted if shore birds, which comprise a large part of the falcon's diet, are reduced or dispersed by the proposed modifications.

As previously discussed, the flood tide delta is an important feeding and resting site for resident and migratory birds. Brown pelicans (Pelecanus occidentalis) use nearby spoil islands and exposed sand shoals along the inlet delta as resting sites. This use is greatest during the summer and fall seasons. Project changes which increase delta scour by changing the current regime or which increase dredge spoil island use could result in habitat loss and behavioral disturbances to that species. Finally, if it becomes apparent that the proposed project modifications will result in impacts on threatened and endangered species not considered in the previous Section 7 consultation, consultation must again be initiated for those species affected.

We hope that this additional information is useful to you. As specific planning information is developed and made available to us, we will be more capable of assessing expected or potential modification consequences.

Sincerely yours,

L.K. (MIKE) GANTT,
*Field Supervisor.*

LITERATURE CITED

Peterson, C. H. and N. M. Peterson. 1979. The ecology of intertidal flats of North Carolina: a community profile. U.S. Fish and Wildlife Service. Office of Biological Services. FWS/OBS-79/39. 73 pp.

Reilly, F. J. Jr., and V. J. Bellis. 1978. A study of the ecological impact of beach nourishment with dredged materials on the intertidal zone. Institute for Coastal Marine Resources. Tech. Report No. 4. 107 pp.

U.S. Army Corps of Engineers. 1977. Final Environmental Impact Statement, Manteo (Shallowbag) Bay project. Wilmington District, U.S. Army Corps of Engineers. 86 pp.

Mr. ROE. If we do not get people going than it is not going to happen. So that is what we are going to do.

Mr. POTTER. I appreciate your being involved in this, Mr. Chairman, and maybe you can help clear it up.

Mr. ROE. I will probably never be welcomed back in North Carolina again.

All right. I have no further questions.

Mr. STANGELAND. No questions.

Mr. ROE. We want to thank you very much for your testimony this morning.

Now, ladies and gentlemen, we will take a break and then return at 1:30 and we will put Secretary Summers up first.

[Whereupon, at 11:55 a.m., the subcommittee recessed, to reconvene at 1:30 p.m., the same day.]

AFTERNOON SESSION

Mr. ROE. The subcommittee will come to order.

We will now hear from James A. Summers, Secretary of the North Carolina Department of Natural Resources and Community Development.

Mr. Secretary, I welcome you to the committee, and we have your testimony.

Mr. Summers, the full text of your prepared statement will appear in the record at this point.

[Statement referred to follows:]

TESTIMONY DELIVERED BY SECRETARY JAMES A. SUMMERS, NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT

I am James A. Summers, Secretary of the North Carolina Department of Natural Resources and Community Development, and I appreciate the opportunity to appear before you today. I am here on behalf of Governor James B. Hunt to testify in support of Title IV of H.R. 3082, the Emergency Wetlands Resources Act of 1983. This legislation was introduced by Congressman Walter B. Jones, and Title IV of the bill is intended to resolve a legal dispute which has blocked a project, authorized by Congress in 1970, to stabilize Oregon Inlet. Governor Hunt and many other North Carolinians have worked for years toward realization of this critical project. As time has passed, the urgency for completing this project has become even greater.

The River and Harbor Act of 1970 authorized a federal navigation project at Manteo Bay, North Carolina to stablilize Oregon Inlet through use of jetties and sand transfer facilities. The bill under consideration now would authorize the use of Federal lands adjacent to Oregon Inlet for completion of this project. The lands in question were previously set aside by Congress for the Cape Hatteras National Seashore and Pea Island National Wildlife Refuge. When Congress authorized the Manteo Bay project it clearly intended that the portions of these federal lands necessary for the construction of the jetties were to be used. This legislation simply clarifies the intent of Congress by specifically authorizing the Army Corps of Engineers to use the necessary federal land to complete the Oregon Inlet project.

The Oregon Inlet project has been controversial. There has been much misinformation and misunderstanding of the project. We have determined our position on this project with great care. My Department of Natural Resources and Community Development convened in the spring of 1983 a panel of state and university experts to review the plan for the jetties and to evaluate it by engineering, economic, and environmental standards.

The Department has consulted with knowledgeable persons on the design of the project. After this careful review, we are more convinced that the project is sound

and that it should move forward as soon as possible. Today I will discuss our conclusions on five major points.

First, dredging alone is not enough. The Corps of Engineers has been making a valiant effort to maintain a safe channel by dredging in recent years. At one point, all three of the Corps' sidecasting dredges were working simultaneously in Oregon Inlet. However, in December 1982, one winter storm wiped out all the work done by the intensive dredging effort in a matter of days.

The same thing happened the winter before when a storm produced such sudden and drastic shoaling of the channel that the United States Coast Guard had to close the inlet to navigation, with a very destructive effect on our fishing industry and on the economy of Northeastern North Carolina.

Some individuals have urged the Corps of Engineers to use hopper dredges, which would remove sand from the areas of the inlet rather than just shifting it to the side of the channel.

Studies by the Corp of Engineers have shown that the hopper dredges will not be able to dump their loads of sand close enough to the shore for the sand to get back into the beach system. Intensive hopper dredging would mean the loss of large quantities of sand from the beach system and would greatly increase the erosion rate on the nearby beaches. This kind of dredging is not only inadequate for navigation reliability and safety. It is also unacceptable for environmental reasons.

The basic flaw with dredging is that a single winter storm can wipe out the accomplishments of several months of expensive dredging in a matter of a few days. In the last two winters, we have clearly seen that dredging alone cannot possibly maintain a reliable and safe channel during our winter fishing season.

Second, we are confident that the project is economically justified. We are assisting the Corps in gathering information to document the benefits of the project. We are convinced that stabilization of the Oregon Inlet will:

Allow an additional 20–25 million pounds of fish landings per year

Save 125 full-time fishing boats an average of 10 detours to Ocracoke Inlet per year. Each trip means an additional 15 hours of travel at a cost of $50.00 per hour.

Allow an additional three trips through the Inlet to land fish by each of about 250–300 transient vessels. This will save each vessel an average of about 18 hours of travel time each trip.

Eliminate the need for about 385 detours to Hampton Roads and about 630 detours through Ocracoke Inlet each year because of hazardous conditions at Oregon Inlet. This will be a savings of 15–20 hours each time.

More than double the number of fishing trips by the 25–30 charter boats which use Oregon Inlet.

More than double the number of trips through Oregon Inlet by noncommercial fishing boats.

Reduce the dollar losses due to shipwrecks by an amount ranging from 10–15 million dollars over a 50 year period.

I have told you about only a few of the economic benefits of the Oregon Inlet project. It is the responsibility of the Corps of Engineers to take this information and produce a complete benefit cost analysis according to federal standards. Based on the information that we are aware of we are confident that the Oregon Inlet project will have a sound economic justification.

Third, the construction of jetties at Oregon Inlet will not drastically increase erosion on nearby beaches. This committee needs to appreciate that any inlet blocks the natural movement of sand along the coast and tends to cause erosion on nearby beaches.

Right now with no jetties in place, the beach on Pea Island south of the inlet is presently eroding at an average of about seven feet each year over an extensive area. The jetty project is based on careful consideration of the movement of sand along the coast. We know that the jetties will block sand on the north side of the inlet. The project plan calls for this sand to be systematically transferred to the south side of the inlet to prevent an increase in erosion.

Our support of the jetty construction is based on the commitment by the Corps of Engineers to carry out regular by-passing of sand around the inlet as needed.

Fourth, jetty construction will not permanently harm recreation. The shore along Oregon Inlet is extensively used by the public for surf fishing, sunbathing, walking, and just enjoyment of this beautiful part of our state. During the construction of the jetties, there will be some limit to access by dune buggies to the construction area. After the project has been constructed, fishermen and sunbathers, including those in off-road vehicles, will still have access to the lands along the north side.

What is more, we know the jetties serve as attracters to many species of fish. Jetties have the same benefits as the artificial reefs that we build to improve fish habi-

tat. The plan for the jetties calls for paved walkways along the top of each jetty to make them accessible to fishermen and will even increase the recreational use of this area.

Finally, we want to stress the value of this project in protecting the lives of our citizens. Eight lives have been lost in shipwrecks at the inlet in the last fifteen years. Three vessels have been lost in three years. Alone, the value of the project for saving lives goes much beyond the fishermen and recreational boaters who are trying to pass through Oregon Inlet. Admiral John D. Costello, Commander of the Fifth District of the Coast Guard, has testified that when Oregon Inlet is closed to navigation, his patrol boat has to travel 125 miles to respond to a distress call that could be only two or three miles off the inlet. This is not a matter to be considered lightly.

The Oregon Inlet Coast Guard Station averages about 300 distress calls a year. Our fishermen, who make a living by going back and forth through Oregon Inlet, face a level of danger that we would never accept on the highways and at the airports that we use for our own business.

North Carolina takes the protection of its coastal environment very seriously. We have two shoreline national parks that take up 127 miles or about 40 percent of our coastline. State government fully supported the creation of these parks and bought land to donate. We have three shoreline state parks. We have an additional seventy-seven miles of undeveloped barrier islands that will probably never be developed because of state and federal regulations. We have a State Coastal Area Management Act and program that we believe is as strong as any in the country. I mention these facts to show you that we have a proven record of protecting our coastal environment. Our position on Oregon Inlet is consistent with our policy for protecting coastal resources.

I would like to thank the members of this Committee for giving me the opportunity to make this statement. We have considered the Oregon Inlet project very carefully. Our firm conclusion is that the construction of jetties is the only way to provide a safe navigation channel through Oregon Inlet. Any environmental effects of the project would be far outweighed by economic benefits to the State of North Carolina and the added safety for our fishermen. I ask your support in passing H.R. 3082 and in moving this project ahead to construction as soon as possible.

---

## North Carolina Department of Natural Resources and Community Development, Department of Commerce—Updated Analysis of the Oregon Inlet Project

*Introduction*

The Manteo (Shallowbag) Bay Project consists of the stabilization of Oregon Inlet by the construction of two jetties, providing a navigation channel through the inlet 400 feet wide and 20 feet deep, deepening the navigation channel from Oregon Inlet to Wanchese Harbor to a depth of 14 feet and a width of 120 feet, and enlarging the harbor basin at Wanchese to 15 acres and deepening it to 14 feet. The enlargement of the harbor at Wanchese has already been accomplished with federal funds appropriated for project construction. The deepening of the channel from Oregon Inlet to Wanchese Harbor is a routine project with no complex engineering problems or serious environmental issues. This analysis will therefore concentrate on the construction of the jetties at Oregon Inlet and on sand bypassing around the inlet.

### I. ECONOMIC BENEFITS

The Corps of Engineers has recently reanalyzed the benefits and costs of the project. Results are expected to be available by the end of April, 1983. The Corps of Engineers can properly consider only benefits to the national economy as a whole. The project's importance to northeastern North Carolina, a region of chronic underemployment and low income, goes far beyond its contributions to the national economy. A navigable inlet is vital to the coastal counties of northeastern North Carolina, where fishing and tourism are the economic mainstays. Oregon Inlet is the only access from protected harbors to the ocean between Cape Henry, Virginia and Cape Hatteras, a distance of 125 miles. More than 200 commercial vessels use Oregon Inlet on a regular basis when channel conditions permit navigation without unacceptable risk to vessel and personal safety.

The economic value of Oregon Inlet is greatly limited by the present inadequate and dangerous navigation channel. In recent years, the inlet has been closed by storms for periods of several days during the prime winter fishing season. These difficult conditions deter the more modern fishing boats and fish processing businesses

from using or locating at North Carolina ports. Creating a stabilized navigation channel through the inlet will have the following national economic benefits: (1) commercial seafood landings will increase substantially; (2) vessel operating costs will be less; (3) seafood production savings will be realized; (4) vessel losses and damages will be reduced, and (5) party and headboat traffic will increase. These economic benefits are being thoroughly documented and updated in the economic reanalysis now nearing completion.

*Wanchese Harbor Seafood Industrial Park*

There are other significant economic benefits for North Carolina that are not included in the Corps of Engineers' calculations of the national economic benefits of the Manteo (Shallowbag) Bay Project. These benefits will accrue principally from operations in the Wanchese Seafood Industrial Park, about six miles inland from Oregon Inlet. The State of North Carolina, in cooperation with federal agencies, is developing this Park as a modern commercial seafood complex to accommodate large-scale seafood handling and processing operations for both domestic and foreign markets. A total of $7.6 million has been spent to construct basic support facilities within the Park. Additionally, $500,000 has been spent to enlarge and deepen Wanchese Basin. This enlargement of the harbor is an element of the federal Manteo (Shallowbag) Bay Project.

State analysis indicates that about 500 primary jobs will be created by commercial operations within the Park, and an additional 125 jobs related to these operations. This means about $3 million annually in direct wage benefits. These wages will significantly affect the regional economy and will bear favorably on the nation's underemployment problem.

Capital investments by commercial firms that will build and operate within the Park are estimated to be in the order of $15 million. The operations of these firms will create a need for supplies and services, with consequent economic benefits to suppliers within and outside the area.

Wholesale processing for export markets, to be done within the Park, will reduce the imbalance between the nation's import and export of seafood, with a consequent reduction in our serious international trade deficit. In 1981, the United States imported seafood costing about $3 billion and exported a total of about $1 billion—for a trade deficit of about $2 billion. Roughly 55 percent of our total exports were salmon from the West Coast. There is a tremendous potential for export marketing of the seafood to be processed at Wanchese.

Realizing the economic benefits of Wanchese Harbor depends on attracting private capital investment. This cannot occur without improved connecting channels and especially without a safe and reliable channel through the inlet. The result of leaving the inlet in its present conditions will be continued loss of lives and property in attempting to navigate the dangerous channel. More fishing boats may choose to operate elsewhere, reducing local employment and income. At the national level, it will mean non-realization of potential economic benefits, primarily in the areas of increased employment and international trade that would result from the full development of Wanchese Harbor.

Oregon Inlet also serves as the access to ocean fishing grounds for other ports in Albermarle, Croatan, and Pamlico Sounds. A reliable navigation channel at Oregon Inlet will produce an economic stimulus over a broad area in northeastern North Carolina.

Conclusion: Current and future economic benefits are very favorable.

## II PROJECT ENGINEERING

*Jetty stability*

From a structural viewpoint, the jetties, as designed, are very safe and will be stable under the severe wave environment which exists at Oregon Inlet. The design (concrete sheet piles) ensures close to 100 percent entrapment of the normal littoral drift, excluding those periods when overtopping occurs. Many features of the project design (Cross-section, material specification, construction specification) are very conservatively designed with a large margin of safety. A review of the drilling logs and the geologic report in the General Design Memorandum indicates that the existing natural materials should easily support the jetty structure with only minor local settling. The bearing loads are not excessive. If any soft underlying materials are found later, as a result of additional borings near the seaward end of the jetties, the design can be easily adjusted. The construction scheme as presently planned utilizes two trestles and is intended to minimize bearing loads. However, this is probably an unnecessary precaution, and again evidence of an extremely conservative design.

Conclusion: The jetties will perform their structural function as intended.

*Jetty alignment*

The Corps of Engineers designed the jetties with the help of a large-scale physical model of the inlet, which was used to test the results of various jetty construction materials and alignments. Most jetties are placed perpendicular to the shoreline to achieve the shortest jetty length that will be effective. The recommended design for the Oregon Inlet jetties places them at an angle to the shoreline to parallel the existing inlet channel. The south jetty is to be built first. If the inlet channel realigns itself after construction of the south jetty, it may be possible to realign the north jetty in a more normal direction to the shore. This contingency can be taken care of by monitoring of the inlet and by an adjustment in the design of the north jetty as anticipated in the project plan.

*Sand bypassing*

Sand bypassing around the jetties is a major feature of the project. As noted below in section III, the sand bypassing and attendant beach nourishment are absolutely required on a permanent and regular basis to prevent an increase in beach erosion south of the inlet. The sand bypassing scheme envisions use of a specially-design moored breakwater, floating in a sloping mode. This is a critical component of the bypassing scheme. Its use in a prototype situation has not been thoughly demonstrated, but will be prior to deployment. The breakwater units are to be configured in a wave maze or wave trap pattern, with the actual number of units and their effectiveness at Oregon Inlet to be established as the project progresses. Personnel at the Wilmington District of the Corps of Engineers have scheduled the necessary engineering and testing work. The Corps is working closely with the U.S. Navy on an extensive research program on floating breakwaters. The Navy development program, which began in 1978, has tested several generations of breakwater designs. Contracts for the final design are underway. Following design completion, prototypes will be built and tested at Oregon Inlet.

A secondary bypass system utilizing a portable dredge has been included in the overall plan. This provision has been an integral part of the plan from the beginning. However, as is clear in the General Design Memorandum, a portable dredge can not be considered as a complete substitute for the primary bypassing scheme. The quantities of material to be handled are beyond the capabilities of a portable dredge.

Conclusion: Sand bypassing and beach nourishment are absolutely required on a regular and permanent basis. The existing plan, utilizing sloping floating breakwaters, is being studied and tested by the Corps of Enginers. The Corps believes this plan will be successful, although it has not yet been demonstrated to be technically and economically feasible under the specific conditions at Oregon Inlet. The development of breakwater designs is proceeding through an active U.S. Navy and U.S. Army design and testing program.

## III. ENVIRONMENTAL IMPACTS

Construction of two jetties at Oregon Inlet will have several environmental effects: (1) on land use in the immediate area of the inlet where the jetties are located, (2) on the flow of water and marine organisms through the inlet, and (3) on beaches up and down the coast from the inlet. Each of these impacts will be separately summarized.

*Land use at the inlet*

On the north side of the inlet, the north jetty will be constructed on National Park Service land near the Oregon Inlet campground. About 18.8 acres of land will be permanently committed to the project. During construction, noise and dust will reduce the attractiveness of the campgrounds and may reduce visitor use. After construction is complete, visitor usage should return to normal. When sand bypassing is underway at the inlet, a pipeline dredge will be operating from 2000 to 4000 feet from the campground. This dredging is anticipated to require between 2 and 3 months each year during the months of May through August. Depending on wind and surf conditions, noise produced by the dredging might be audible to users of the campground.

The north jetty will block use by off-road vehicles of about 2000 feet of existing beach front. This is a popular fishing area. However, both jetties will be fish attractants and both will have paved fishermen's walkways for use by the public. The jetties themselves are anticipated to become very popular fishing spots.

On the south side of the inlet, 4.4 acres of Fish and Wildlife Service lands will be taken up by the jetty construction. Additional amounts of land will be used during the construction process. The north end of Pea Island is suffering from severe erosion at the present time. A substantial amount of land and visitor facilities have already been lost. The construction of jetties will stabilize the land on each side of the inlet and prevent further erosion in this immediate area. A sizable fillet of land will be built up on each side of the inlet adjacent to the jetties.

Conclusion: The effects in the immediate location of the jetties are some permanent dedication of land for the jetty structures, possible noticeable noise at the Oregon Inlet campground during sand bypassing operations, and stabilization of the shoreline on each side of the inlet, ending the present severe erosion problem at the north end of Pea Island.

*Effects on water flow through the inlet*

A number of valuable species of fish and shellfish pass through Oregon Inlet at some point in their life stages. Some of these species spawn in the ocean. Fish larvae travel through the inlet on an incoming tide and then develop in the sounds. The National Marine Fisheries Service has raised the question of whether the jetties would interfere with this passage of fish larvae. The Corps of Engineers has made a strong effort to design a study that would answer this question. It has finally been concluded that there is no possible way to design a study to definitely answer this question for any reasonable expenditure. The chief obstacles are the tremendous difficulties in obtaining representative samples of fish larvae and the great natural variations in fish populations from year to year. There are many examples of stabilized inlets in the United States adjacent to productive fish nursery areas. While it is not possible to definitely prove that the jetties will not have a harmful effect, there does not seem to be any substantial evidence that there will be a harmful effect.

Some observers have feared that the construction of jetties would block the high flows of storm water out of the inlet during floods and hurricanes and perhaps cause the formation of another inlet. This could bring about very serious property damage and transportation disruption. The Corps of Engineers has carefully studied this by both mathematical and physical models and demonstrated that the effect of the jetties on the flow capacity of the inlet will be extremely small.

Conclusion: The jetty system will not have any substantial effects on water levels inside the inlet during hurricanes or floods.

*Effects on beaches up and down the coast from the inlet*

The most serious concern raised by the Department of the Interior is the fear that the jetties would accelerate beach erosion, particularly down-coast from the project on Pea Island. Inlets tend to increase beach erosion in their vicinity. This is because there is a natural movement of sand along the coast. In this area, the predominant movement is toward the south. Inlets interfere with this sand movement and starve the downcoast beach, producing higher erosion. In fact, the beach on Pea Island is presently eroding at an average of about 7 feet a year over an extensive area. In some places the erosion is much higher than this. About 2.6 acres of land per year is now being lost. The design of the Oregon Inlet project recognizes that there is a net movement of sand of about 500,000 cubic yards toward the south. This sand will be trapped upcoast from the north jetty. The Corps plans to periodically transport this sand across the inlet to nourish the beaches south of the inlet. Successful bypassing of this sand would prevent an increase in the present rate of erosion on Pea Island. This sand can be placed at various locations south of the inlet, depending on where it is most needed to control erosion.

The effects south of the south jetty could be very severe if bypassing is not carried out properly by putting sand back on the beach on a frequent, periodic basis. There is no doubt that higher erosion will take place from the moment the south jetty is emplaced. In other words, an "erosion wave" will be initiated just beyond the shadow zone of the south jetty, and will begin to propagate in a southerly direction. The magnitude of this "erosion wave" will be a function of, among other things, the time lag until sand bypassing commences.

The Department of the Interior is also concerned about the effects of the placement of sand on Pea Island on benthic organisms which live in the sand in the surf zone. The sand that will be placed on the beach is clean beach sand, identical with the material already on the beach. Experience with the Wrightsville Beach and Carolina Beach nourishment projects has shown that these benthic organisms reestablish their populations without difficulty after beach nourishment. Any effects will be minimized by the use of only 3000 to 5000 feet of the beach for sand deposition during any one sand bypassing operation.

*Effects on waterfowl*

Pea Island National Wildlife Refuge is well known for its large populations of waterfowl and other birds. The habitat for these birds is the beaches, dunes and marshes of the refuge, as well as special waterfowl impoundments. The waterfowl impoundments are already threatened by the present rapid erosion on the beach front. A small pond used by waterfowl near the north end of the island is also almost breached by the rapid erosion near the inlet.

The construction phase of the project will probably limit waterfowl use close to the noise and movement of construction work. After construction is complete, the effect of the project on waterfowl should be minimal. The dredge pipeline for sand bypassing will go down the right-of-way of highway 12 and cross the dunes to the beach only at the specific site chosen for beach nourishment.

The project will have some good effects on bird habitat. Spoil disposal from the improvement of the channel from Oregon Inlet north to Wanchese Harbor has been carefully planned to create the best possible habitat for colonial nesting birds on the spoil disposal islands. These artificially-created islands are extremely valuable bird habitat and the project plan includes its preservation and improvement. The periodic beach nourishment that will occur during sand bypassing will offer an opportunity to protect the waterfowl impoundments from breaching by erosion. The sand can be placed on the beach where most needed to control erosion.

Conclusion: Possible increased beach erosion and its effect on waterfowl habitat is the major environmental issue at the project. The project plan calls for periodic sand bypassing which will prevent an increase in beach erosion south of the inlet. The sand bypassing system will allow the beach to be built back up at the specific spots where erosion problems may occur.

## IV. DREDGING ALTERNATIVES

During the history of the planning for the improvement of navigation at Oregon Inlet, the Corps of Engineers has evaluated numerous alternative methods of providing safe navigation through the inlet. Up to this point, all of the project alternatives involving maintaining a navigation channel by dredging alone have proven unacceptable for one of several reasons:

1. Not economically justified.
2. Not effective in maintaining a safe navigation channel of adequate size for modern fishing vessels.
3. Unacceptable enviromental impacts, specifically a drastic increase in beach erosion.

The U. S. Department of the Interior has requested that the Corps of Engineers make another study of the possibility of maintaining the inlet channel by dredging with split-hull hopper dredges. The work on this study is essentially complete and the results are anticipated sometime during the month of April 1983.

All participants in the debate over Oregon Inlet agree that dredging alone cannot reliably maintain an open navigation channel at all times. Violent winter storms can close a channel which if not protected by jetties in a matter of hours and keep it closed for days or weeks when weather is too rough for dredging. A navigation channel not protected by jetties will always be subject to shoaling and shifting, making navigation hazardous and difficult. Lives and ships are regularly lost in Oregon Inlet. Fishermen who have to use the inlet to make a living regularly face dangerous conditions that would not be tolerated at other transportation facilities such as airports or highways. An inlet protected by jetties would have a stable, well-marked navigation channel, protected from extremes of wave action. Navigation would be much easier and safer.

Conclusion: The constant threat to life posed by Oregon Inlet raises issues that are not adequately dealt with in benefit-cost calculations. Jetty construction is greatly needed to provide safe working conditions for the State's fishermen.

## V. STATE COST SHARING

Under federal law, both the construction and the maintenance of commercial navigation projects are a 100 percent Federal cost, with the exception of lands and dike construction for spoil disposal, which are a non-federal responsibility. At the Oregon Inlet project, North Carolina is obligated to pay the cost of diking for spoil disposal, which is estimated at $560,000, and the cost of bridge protection measures for the Bonner Bridge, with an estimated cost of $5,200,000.

Congress has appropriated construction funds for the Manteo (Shallowbag) Bay Project. Part of these federal funds have already been spent for the construction of

the enlarged Wanchese Harbor basin. Congress has appropriated additional construction funds, which are now available for expenditure.

The Reagan Administration has proposed new cost sharing principles for some types of federal water resources development projects. The Administration has made specific proposals for additional non-federal cost sharing at deep harbors and for the inland waterway system. Congress has not accepted the Administration proposals for cost sharing changes. The Administration has not made any formal or specific proposals for additional cost sharing at projects like the Oregon Inlet Project.

Conclusion: Congress has appropriated construction funds for the Oregon Inlet project. The federal government should proceed with construction expeditiously, following the cost sharing principles established by federal law.

VI. LAND USE

Construction of the Oregon Inlet jetties would require the use of a small amount of land from the Cape Hatteras National Seashore on the north side of the inlet and from the Pea Island Wildlife Refuge on the south side of the Inlet. The Congressional authorization of the Manteo (Shallowbag) Bay Project included the stabilization of Oregon Inlet by the construction of jetties on the north and south sides. The project plan made it clear that the jetties would require land for anchoring on each side of the jetty. The sensible interpretation of this Congressional action is that Congress intended for the necessary lands to be used for the project,

The State of North Carolina has demonstrated its support for the preservation and protection of lands on the outer banks by purchasing 16,391 acres of land and donating it to the U. S. Department of the Interior for the Cape Lookout National Seashore. The value of these donated lands was $5.8 million. Oregon Inlet is the only access to the ocean for a distance of 125 miles along the Atlantic Coast. Navigation use of the inlet is essential to North Carolina's economy. The welfare of the State requires a modern stabilized navigation channel through Oregon Inlet, just as it requires a modern highway bridge spanning the inlet.

The State of North Carolina believes that the construction of the Oregon Inlet jetties is clearly authorized by Congress and is an appropriate use of federal lands adjacent to a vital navigation link.

Conclusion: The U.S. Department of the Interior should grant permission to use lands at Oregon Inlet for jetty construction, consistent with the Congressional authorization of the navigation project which clearly envisions anchoring jetties on each side of the inlet.

Mr. ROE. Please proceed.

## TESTIMONY OF HON. JAMES A. SUMMERS, SECRETARY OF THE NORTH CAROLINA DEPARTMENT OF NATURAL RESOURCES AND COMMUNITY DEVELOPMENT

Mr. SUMMERS. Thank you, Mr. Chairman.

My name is Jim Summers, and I am the Secretary of the North Carolina Department of Natural Resources and Community Development, and I do sincerely appreciate the opportunity of appearing here today.

I am here on behalf of Gov. James B. Hunt, Jr., to testify in support of title IV of H.R. 3082, the Emergency Wetlands Resource Act of 1983.

This legislation was introduced by Congressman Walter Jones. Title IV of the bill is intended to resolve a legal dispute which has blocked a project authorized by Congress in 1970 to stabilize Oregon Inlet.

Governor Hunt and many other North Carolinians have worked for years toward realization of this critical project. As time has passed, the urgency for completing the project has become even greater.

The River and Harbor Act of 1970 authorized a Federal navigation project at Manteo Bay to stabilize Oregon Inlet through the use of jetties and sand transfer facilities.

The bill under consideration now would authorize the use of Federal lands adjacent to Oregon Inlet for completion of this project. The lands in question were previously set aside by Congress for the Cape Hatteras National Seashore and Pea Island National Wildlife Refuge.

When Congress authorized the Manteo Bay project, it clearly intended that the portions of these Federal lands necessary for the construction of the jetties were to be used. This legislation simply clarifies the intent of Congress by specifically authorizing the Army Corps of Engineers to use the necessary Federal land to complete the Oregon Inlet project.

Governor Hunt and North Carolina State government stand united with our coastal local governments, with Senator Helms and Senator East, and with Congressman Walter Jones in urging Congress to facilitate the completion of this project.

The Oregon Inlet project has been controversial. And you've certainly heard that expressed in the hearing this morning.

There has been much misinformation and misunderstanding of the project. We have determined our position on this project with great care.

Our Department of Natural Resources and Community Development convened in the spring of 1983 a panel of State and university experts to review the plan for the jetties and to evaluate it by engineering, economic, and environmental standards.

After this careful review, we are more convinced than ever that the project is sound and that it should move forward as soon as possible.

Today, I will discuss our conclusion on five major points. First, dredging alone is not enough. The Corps of Engineers has been making a valiant effort to maintain a safe channel by dredging in recent years. At one point, all three of the corps side casting dredges were working simultaneously in Oregon Inlet.

However, in December 1982, one winter storm wiped out all the work done by the intensive dredging effort in just a matter of days.

The same thing happened the winter before when a storm produced such sudden and drastic shoaling in the channel that the U.S. Coast Guard had to close the inlet to navigation, with a very destructive effect on our fishing industry and on the entire economy of northeastern North Carolina.

Some individuals have urged the Corps of Engineers to use hopper dredges, which would remove sand from the area of the inlet rather than just shifting it to the side of the channel.

Studies by the Corps of Engineers have shown that the hopper dredges will not be able to dump their loads of sands close enough to the shore for the sand to get back into the beach system. Intensive hopper dredging would mean the loss of large quantities of sand from the beach system, and would greatly increase the erosion rate on the nearby beaches.

This kind of dredging is not only inadequate for navigational reliability and safety, but it is also unacceptable for environmental reasons.

The basic flaw with dredging is that a single winter storm can wipe out the accomplishments of several months of expensive dredging in a short period of time. In the last two winters, we have

clearly seen that dredging alone cannot possibly maintain a reliable and safe channel during our winter fishing season.

Second, we are confident that the project is economically justified. We are assisting the corps in gathering information to document the benefits of the project. We are convinced that the stabilization of Oregon Inlet will allow an additional 20 to 25 million pounds of fish landings per year and will save 125 full time fishing boats an average of 10 detours to Ocracoke Inlet per year. Each trip means an additional 15 hours of travel at a cost of $50 per hour.

A stablized inlet will allow an additional three trips through the inlet to land fish by each of about 250 to 300 transient vessels. This will save each vessel an average of about 18 hours of travel time on each trip.

A stabilized inlet will eliminate the need for about 385 detours to Hampton Roads, and about 630 detours through Ocracoke Inlet each year because of hazardous conditions at Oregon Inlet. This will be a savings of between 15 and 20 hours each time.

A stabilized inlet will more than double the number of fishing trips by the 25 to 30 charter boats which attempt to use Oregon Inlet, more than double the number of trips through Oregon Inlet by noncommercial fishing boats, and reduce the dollar losses due to shipwrecks by an amount ranging from $10 to $50 million over a 50-year period.

I've told you about only a few of the economic benefits of the Oregon Inlet project. It is the responsibility of the Corps of Engineers to take this information and produce a completed benefit-cost analysis according to Federal standards. Based on the information that we are aware of, we are confident that the Oregon Inlet project will have a sound economic justification.

Third, the construction of jetties at Oregon Inlet will not drastically increase erosion on nearby beaches. We maintain just the opposite, that it will actually nourish those beaches.

This committee needs to appreciate that any inlet blocks the natural movement of sand along the coast and tends to cause erosion on nearby beaches. Right now, with no jetties in place, the beach on Pea Island south of the inlet is presently eroding at an average of about 7 feet each year over an extensive area. And I might add that that compares to an average coastal erosion rate of between 2 and 3 feet.

So already, now, without the jetties, Pea Island is eroding approximately two and a half times our average coastal erosion rate. The jetty project is based on careful consideration of the movement of sand along the coast.

We know that the jetties will block sand on the north side of the inlet. The project plan calls for this sand to be systematically transferred to the south side of the inlet to prevent an increase in erosion. Our support of the jetty construction is based on the commitment by the Corps of Engineers to carry out regular bypassing of sand around the inlet as needed. And I might add that the sand could be transferred then to the area where erosion has been the greatest. And this would be, I think, a very systematic way of dealing with that erosion problem.

Fourth, jetty construction will not permanently harm recreation. The shore along Oregon Inlet is extensively used by the public for surf fishing, sun bathing, walking, and just plain enjoyment of the beauty of the area.

During the construction of the jetties, there will be some limit to access by dune buggies to the construction area. After the project has been constructed, fishermen and sun bathers, including those in off-road vehicles, will still have access to the lands along the north side.

What is more, we know that jetties serve as attracters to many species of fish. Jetties have the same benefits as the artificial reefs that we build to improve fish habitat. The plan for the jetties calls for paved walkways along the top of each jetty to make them accessible to fishermen, and will even increase the recreational use of the area.

Finally, we want to stress the value of this protect in projecting the lives of our citizens. Eight lives have been lost in shipwrecks at the inlet in the last 15 years. Three vessels have been lost in 3 years alone. And I might add that each of those three vessels, because they were large, fully equipped fishing vessels, were valued in excess of a half a million dollars each.

The value of the project for saving lives goes much beyond the fishermen and recreational boaters who are trying to pass through Oregon Inlet. Adm. John D. Costello, commander of the Fifth District of the U.S. Coast Guard, has testified that when Oregon Inlet is closed to navigation, his patrol boat has to travel 125 miles to respond to a distress call that could be only 2 or 3 miles off the inlet. This is not a matter to be considered lightly. The Oregon Inlet Coast Guard Station averages about 300 distress calls per year.

Our fishermen who make a living by going back and forth through Oregon Inlet face a level of danger that we could never accept on the highways and at the airports that we use for our own business.

North Carolina takes the protection of its coastal environment very seriously. We have two shoreline national parks that take up 127 miles or about 40 percent of our coastline. And that question, Mr. Chairman, I know was asked this morning, as to how much land of our coast was under control of the U.S. Department of the Interior. Forty percent of our coastline is under control right now; 127 miles.

State government fully supported the creation of these parks, and bought land to donate for them. We have three shoreline State parks. We have an additional 77 miles of undeveloped barrier islands that will probably never be developed because of State and Federal regulations.

We have a State Coastal Area Management Act and program that we believe, and that is sustained by people who know, is as strong as any in our Nation.

I mentioned these facts to show you that we have a proven record of protecting our coastal environment that is second to none. Our position on Oregon Inlet is consistent with our policy for protecting the resources on our coast.

I would like to thank the members of this committee for giving me the opportunity to make this statement.

We have considered the Oregon Inlet project very carefully. Our firm conclusion is that the construction of jetties is the only way to protect a safe navigation channel through Oregon Inlet.

And out of the options that this testimony has brought forth today, we hear only two options available: One, the jetties and one the continued dredging that we have heard so much about. All of the destruction that we have seen of boats and property and lives has come about for the most part when dredging was going on.

Any environmental effects of the project would be far outweighed by economic benefits to the State of North Carolina and the added safety for our fishermen.

I might add that it is 125 miles from Cape Henry to Cape Hatteras. And Oregon Inlet represents the only access from the ocean into a safe harbor for an area of 125 miles.

I sincerely ask for your support in passing H.R. 3082, and in moving this project ahead to construction as soon as possible.

Mr. Chairman, I'd be happy to respond to any questions that you or the members of the committee might have.

Mr. ROE. Thank you very much, Mr. Secretary.

I have one question: You make the statement that "when Congress authorized the Manteo Bay project it clearly intended that the portions of these Federal lands necessary for the construction of the jetties were to be used."

Is there some writings to that effect? Or where does that citation come from.

Mr. SUMMERS. I don't know that there is a citation, but the point is I don't know that Congress would ever authorize the money and the project without intending that somewhere the land be made available for their use.

It's inconceivable to me that Congress would vote to put a project in motion and at the same time not intend that it be carried forward.

Mr. ROE. That's very generous to us. [Laughter.]

Mr. SUMMERS. I have, you know, from just the time I was very, very young, Mr. Chairman, I've had an immense amount of respect for the good judgment of the Congress.

Mr. STANGELAND. Mr. Chairman, if I might, and I read this following the same section, you're almost saying that the language that Congress used in authorizing this navigation channel, that they were considering jetties at that time, and that's really not so.

It's the utilization of the land for the jetties that's the issue.

Mr. SUMMERS. As I understand the River and Harbor Act of 1970 authorized—and I see the point you're getting at—that a Federal navigation project at Manteo Bay be developed. I don't think there's any question about that.

You know, to me, in response, the bottom line, I think the testimony that you very carefully brought forth this morning in my opinion in such a very comprehensive and good way, Interior's objection honestly seemed to me to boil down to one point: Whether or not the bypass system would be adequate, whether it would work to renourish the area that would be eroded.

And, I think Mr. Vallianos' point is an extremely good one. It's not speculation whether the bypass system will work or not. That is established technology. It will work. And I think it's extremely presumptious of anyone other than the corps to make that judgment over and against the corps' judgment. Because the corps is working sand bypass systems all the time.

So what it really boils down to when you look at the objection that Interior has, Interior's saying we question whether the system will work, and the corps says it's not a question of whether it will work or not, because we've got documentation. We know it works every day.

And I think that's an interesting point as you begin to evaluate the validity of the opposition to this project.

Mr. STANGELAND. Mr. Summers, how long have you been secretary of the North Carolina Department of Natural Resources?

Mr. SUMMERS. Since January 3, 1984. But I was deputy secretary for 3 years.

Mr. STANGELAND. What is your background prior to that?

Mr. SUMMERS. Well, I happen to share with Mr. Roe the fact that we both served as mayors. I notice in your background, sir, that you served as a mayor, and I detected that very quickly from the line of your questioning, very penetrating and very much to the point. [Laughter.]

Mr. ROE. We both survived the last term, you mean.

Mr. SUMMERS. That's right. But I'm a native of North Carolina, graduate of Duke University, tour of duty in the Navy, managed my own business for 22 years before entering State government as part of the Hunt administration upon invitation of our Governor.

So I've been with the Department of Natural Resources as deputy secretary for 3 years, and replaced Secretary Joe Grimsley, who went onto other duties and responsibilities.

Mr. STANGELAND. How much of that coastline is suitable for wildlife habitat as far as resting areas for migratory waterfowl and various other birds and wildlife you have down in North Carolina?

Mr. SUMMERS. I think, really, not being native to the area, but we've got some very outstanding people here who can perhaps respond in a better way to that.

But to me it's inconceivable with roughly 43 percent—including our military projects and Duck, North Carolina. With 43 percent of the coastline that we've gotten now basically under that type protection, it would seem to me that somewhere within the 127 miles, there would be considerable areas that would be suitable for all types of wildlife habitation.

Because there's a big portion of that area, very frankly, that will never be developed. It will remain as a barrier island which I think is very, very proper.

We would not want to see development all over our coast. And I don't want to take lightly—I think any objective analysis of the effectiveness of our coastal area management act, compared with any other State in the Nation, will show that we will compare very favorably.

And I guess that's why I feel so strongly that if we were not totally concerned that this was compatible with environmental con-

cerns along our coast, we just wouldn't be supportive of it, because it would be totally inconsistent for us not to be. We are concerned.

But we think—to me it's the most amazing thing in the world. We've got 180 degrees difference in opinion. We feel very strongly that the jetties not only will not prove to be harmful to the environment. We think it will help. We are convinced of that.

And yet we've gotten—I know people whose intentions are very, very good and very honorable who are saying just the opposite.

But the main point is, as you've said, Mr. Chairman, several times this morning, somebody's right and somebody's wrong. And it's going to take the good, shrewd judgment, I think, of this committee and others that are working with it to make a determination.

But where we come from is that we feel since the corps has been in the dredging business for over 200 years, we feel much more comfortable with the fact that our position is alined with theirs, than with some people who feel that they suspect that something may or may not work, when we think we're dealing with facts.

Mr. ROE. Anything else?

Mr. STANGELAND. Just maybe this, Mr. Chairman. You talk about the panel of State and university experts and you summarize the five points, I guess. You might want to provide us with some more extensive review of who those panelists were, their background, and a summary in a little more detail of what they found.

Mr. SUMMERS. We've got basically the composition of that panel. It was assembled. And we also have a result of their work, and the points that they devoted themselves to.

Mr. ROE. I think that two things, one, that you have summed up, and I think you've clarified for the committee, the witnesses this morning helped, too, that in the length of the islands involved, this is the major inlet, period.

Mr. SUMMERS. Yes.

Mr. ROE. The second point is that either we go on for millions upon millions of dollars worth of dredging which is not achieving the goal, or we do something in the nature we're discussing. But as I connote it—I don't know how you feel about this—but when the Interior Department testified this morning, I think it's a question of methodology more than being opposed necessarily to the project. That's the tenor of what we're trying to get at.

I think that's reasonable at this point. Now, provided we can expedite the Interior Department making either determination or saying, you know, do this or change this, or whatever. That's what we need, some kind of refinement. Do you agree?

Mr. SUMMERS. I agree. It is possible, and I hope that I'm not out of line when I make this statement, but it is possible that there are those perhaps in the Interior Department who feel there should never be any kind of engineering project anywhere on our coast.

And very frankly this is what we're concerned with, because then if that is true, and if that should be the basis for the opposition of the Department of the Interior, then there's no way we can compromise.

Because if you just take that as a flat opposition, I maintain that that should never be embraced as a policy of any administration

because there has to be a judgment made as to whether or not such matters as life, property, and cost effectiveness enter in.

To take a flat opposition that we would never have an engineering project of any kind on our coast to me is inconceivable. And I just hope that your line of questioning this morning brought up the fact. You were saying what is your concern. And finally the issue is whether or not the bypass system will work.

We think that can be met head on. But there is no way if anybody takes a position of flat opposition and says boom, we will never have an engineering project on our coast, there's no way you can compromise.

Mr. ROE. Well, my ears did not hear—they're awfully big, but I didn't hear that from the Interior Department this morning. I think there is room for compromise.

Mr. SUMMERS. The other thing I would say in reference to the dredging, if you notice, we've had about a $20 million expenditure over roughly 20 years, which works out to about a million dollars a year.

And yet the corps is testifying that this year that the dredging cost is going to be like $4.2 to $4.4 million. So we're not looking at a million dollars a year anymore.

And the ironic thing is it won't do the job, even expending $4 to $5 million a year. And the only thing that we can see with inflation is that the cost is going to continue to rise every year.

And I think everybody agrees we need to try to keep the channel open. So it's a question, as you say, Mr. Chairman, of whether or not we're going to be locked into an ever escalating cost of trying to maintain the channel, and then not even being able to do the job.

Perhaps we'd look at it differently if dredging would work. But we proved for year after year that the dredging alone cannot possibly provide a safe channel for our people.

Mr. STANGELAND. One other area that we didn't explore, and I'm not sure that Mr. Summers can answer, but I don't think we did this morning, what would be the operation and maintenance of the channel after jetties?

Mr. SUMMERS. After jetties, we know that the bypass system would involve 2 to 3 months a year of transporting the sand that had been accumulated into the areas that had been subjected to the most erosion. And that's all.

You know, that would be it. And I don't know that that would always be the same time every year, because I'm sure it would take a determination of how much buildup had occurred, which would depend on storm patterns and some other things. But that's all.

And the cost of dredging for that—and you may want to push that point—but it would be just a small portion of what we're looking at right now.

Mr. ROE. Thank you very much, Mr. Secretary. We do appreciate your testimony.

Our next witness is Mr Edward Osann of the National Wildlife Federation, director of the water resources program.

Mr. Osann, the full text of your prepared statement will appear in the record at this point.

[Statement referred to follows:]

STATEMENT OF EDWARD R. OSANN, DIRECTOR, WATER RESOURCES PROGRAM, NATIONAL WILDLIFE FEDERATION

My name is Edward Osann. I am the Director of the National Wildlife Federation's Water Resources Program. The Federation, with over 4 million members and supporters nationwide, is America's largest conservation organization. During the past decade, our membership has adopted more than 50 resolutions establishing Federation policy on various apsects of water resource conservation and development. The Federation and its affiliates have a history of working with state officials and the Federal construction agencies to resolve differences over water projects or policies. We have commented on scores of water projects; we have litigated numerous times as well, in those instances where earlier efforts to resolve differences have failed. We have committed substantial time and effort to the initial development—and now the defense—of the Water Resources Council's procedures for the planning and evaluation of Federal water projects. We have strongly supported legislative efforts, on both appropriations and authorizations, to redirect the Federal water resources development program.

Mr. Chairman, I appreciate the opportunity to present testimony to the Subcommittee this morning on legislation dealing with Oregon Inlet, North Carolina. Title IV would make lands available within the boundaries of the Cape Hatteras National Seashore and the Pea Island National Wildlife Refuge to the Army Corps of Engineers for use in the construction of an inlet stabilization project known as Manteo (Shallowbag) Bay.

The Federation is opposed to passage of Title IV. It would set a dangerous precedent in opening up national park lands to preemption by various branches of government, and is clearly incompatible with the purpose of establishing these valuable protected areas.

In addition, the Corps' proposed inlet stabilization for which these lands are to be taken has been the object of much criticism since its original authorization in 1970. Acknowledging a "fundamental error" in its benefit-cost analysis, the Corps is preparing a new, as yet unreleased, study. In our view, enactment of this provision would be inappropriate, since it would clear the way for a costly and environmentally-damaging project whose basic economic feasibility has yet to be established.

The idea that man-made structures can cost-effectively stabilize the Atlantic's shifting coastline is not compatible with current scientific opinion. A 1981 position paper prepared by nine prominent coastal geologists and signed by over 80 concerned scholars declares, "American taxpayers are paying huge sums of money" to protect the interests of "a relative few." "Stabilization of most American shores," they conclude, "is not justifiable in the broader scope of national interests."

This holds especially true for the proposed jetties at Manteo Bay, on a part of the Atlantic coast considered by coastal geologists to be extremely volatile in terms of storms and shifting barrier islands. Jetties are known to interrupt littoral migration of sand, requiring elaborate sand bypassing systems to replenish "downdrift" beaches. The Corps proposes an offshore bypass facility, protected by a massive floating breakwater, to bypass an estimated 531,000 cubic yards of sand annually.

There are several existing sand bypass facilities on the East Coast, but all are in less dynamic areas, and none are of the scale proposed at Manteo Bay. Few of these facilities have performed as expected. At Masonboro Inlet, North Carolina, for example, the channel has migrated into the deposition basin and up against the north jetty, requiring further construction and dredging. Two years after the completion of jetties and a sand bypass facility at Perdido Pass, Alabama, poor performance of the system required renewed dredging. Despite a functioning bypass system at Hillsboro Inlet in Florida, erosion on the downdrift beach continues.

At nearly $7 per cubic yard, the Corps' annual sand bypass budget for the Manteo Bay Project is more than three times that of the most expensive of the aforementioned projects. Yet there is no more reason, and possibly less, to believe that such a system will successfully mitigate the devastating effect that the jetties could have on the neighboring shoreline. Once constructed, these mile-long jetties may so disturb the natural evolution of the shoreline as to decimate portions of the Cape Hatteras National Seashore and the Pea Island National Wildlife Refuge.

The Federation recommends that the Committee assess the effectiveness of the $2 million dredging program for the inlet which was recently funded by Congress, rather than enacting Title IV of H.R. 3082 at this time. The National Wildlife Federation continues to support the maintenance of renewable fishery resources and a viable commercial fishing industry. Unfortunately, the Manteo Bay Project is a most questionable and costly means of achieving this objective.

Thank you for the opportunity to present these views.

[From the News and Observer, Raleigh, N.C., Thursday, Sept. 8, 1983]

SHALLOW CASE FOR THE JETTIES

For the time being, intensified dredging at Oregon Inlet remains the best bet to maintain a fishing industry in North Carolina's Northeast and to reduce danger to ships and their crews.

The proposed attempt to keep sand out of the treacherous inlet by extending rock-and-concrete jetties into the Atlantic Ocean from Bodie and Pea Islands remains an unconvincing scheme to alter the forces of nature.

Oregon Inlet was no deep channel when North Carolina fishermen switched from shallow-draft boats to larger fishing vessels almost 25 years ago. Dredging by the U.S. Army Corps of Engineers began there in 1960 to deepen the channel only after local fishermen bought bigger trawlers to compete with out-of-state vessels. The constant battle with the sea's movement of sand into the inlet has gone on ever since.

That battle escalated in 1970 with conception of the proposed Manteo (Shallowbag) Bay Project, which includes the jetties, then estimated to cost about $11 million. Construction has been stalled by environmental, cost and feasibility objections. Congress has appropriated almost $16 million for the project over the years, but most of it has been diverted to other projects.

Current efforts by the Corps of Engineers to provide safe passage through the inlet by using a hopper dredge deserve a fair try. If those efforts fail to keep open a consistently safe channel, the key question still is whether a deep-trawler fishery can be maintained nearby. After all, the inlet is marked by the most severe wave action on the Atlantic coast, where ocean storms are relentless and where nature has shown no signs that it will be defeated permanently.

The $100 million-plus cost of the jetties today isn't necessarily excessive contrasted to some public works water projects, especially in the Western United States. But the project has to be justified as something more than a maybe-it-will-work alternative to dredging. Here are a few of the drawbacks:

Turbulent ocean conditions that affect the depth of Oregon Inlet and shift the sand of barrier islands nearby aren't duplicated anywhere else in the world. To supplement the jetties, the U.S. Army Corps of Engineers proposes to use a breakwater system and sand-bypassing operation that are unproven and only partially tested.

The Corps has yet to come up with a cost-benefit ratio for the project that it can defend. The first study it offered was fundamentally in error. A second is not promised until December.

Land that the Corps wants to take from the Interior Department to provide bases for the jetties would reduce beaches of the Cape Hatteras National Seashore Park and the Pea Island Wildlife Refuge. Marine geologists warn that changing the natural movement of the ocean may cause severe erosion on other barrier islands.

Even if the jetties remain stable and the sand trapped by the north jetty can be successfully moved by undersea pipeline to Pea Island on the south, no one knows how the obstructions may affect waters that surge inland during a major storm. One marine scientist, Dr. Orrin Pilkey, has speculated that impeding the flushing action of the sounds could cause the water to cut through land elsewhere, possibly in the Nags Head area.

No North Carolinian is without sympathy for the families of the nine fishermen who, since 1969, have lost their lives in the dangerous inlet. The loss of valuable trawlers, loss of business in the state fishing industry and the dimmed outlook for the Wanchese Seafood Industrial Park are depressing as well. But Rep. Walter Jones, Sen. Jesse Helms and Governor Hunt stand on soft sand in pushing for a project yet to be justified economically.

Mr. ROE. Please proceed.

## TESTIMONY OF EDWARD R. OSANN, DIRECTOR, WATER RESOURCES PROGRAM, NATIONAL WILDLIFE FEDERATION

Mr. OSANN. Thank you, Mr. Chairman.

I would like to say that Mr. Summers make for an excellent witness, and I won't attempt to rebut all the points that have been made this morning.

In fact, I won't attempt to read my statement. I would like to summarize.

Mr. ROE. Your statement has been entered in full in the record.

Mr. OSANN. Thank you, Mr. Chairman.

For the record, my name is Edward Osann, and I am director of the water resources program for the National Wildlife Federation.

I would say that maybe I'll be the first one to take a flat opposition here. The Federation and our affiliate from North Carolina, the North Carolina Wildlife Federation, are opposed to the jetty project. We are opposed to the enactment of title IV of H.R. 3082.

I would like to make four points very briefly.

First, I think we need to be clear as to what title IV of the bill would do. This legislation will clear the way for this project. I think that we ought not focus on the narrow effect of the transfer or access to the property. This will facilitate the construction of the project. I don't think there is any question that we can look to the Appropriations Committee for restraint or the kind of indepth oversight that would be necessary to consider this project in detail when they have 200 to 300 projects to consider each year.

Second, the economic feasibility of this project simply has not been demonstrated, and is not demonstrable at this time

Now, I was sorry to hear your comments early this morning, Mr. Chairman, about the cost/benefit analysis being—I think the characterization was blue smoke. This was an area that I thought the Federation and the committee shared some common interests. And that is to try to upgrade the economic evaluation of these projects, and to place their evaluation on a very credible basis.

I think the Department of the Army is to be commended for acknowledging that a mistake was made in the evaluation of this project, and to take it back and very forthrightly admit that a reanalysis is necessary. In our opinion, enactment of the bill, enactment of title IV at this time would send the wrong message to those men and women of the Corps of Engineers who are trying to do a conscientious job in evaluating these projects.

Third, the environmental acceptability of the project is largely premised upon the effectiveness of the sand bypassing. Now, we have heard today that whether the floating breakwater arrangement works or not, sand bypassing is possible. But again, the question is at what cost? Will the costs of operating this project in an environmentally acceptable manner exceed the benefit base? That is not at all clear as of this time.

Now, simply declaring that sand bypassing will be part of the project does not assure that either beach erosion will not take place, excessive beach erosion, nor that dredging of the channel will not subsequently be necessary.

There are several existing sand bypassing systems on the east coast. Many of these facilities have not performed as expected, and I mention in my testimony instances at Masonboro Inlet, N.C., Perdido Pass, in Alabama, and Hillsboro Inlet, which is considered state of the art and a prototype of its particular type of bypassing operation, that have not performed as anticipated.

And finally I would simply point out that notwithstanding the phalax of public officials from North Carolina that have either appeared today or been cited, that opinion within the State is in fact divided.

I mentioned our own affiliate, largest conservation group in the State with 30,000 members. Attached to my testimony is an editori-

al from one of the State's leading newspapers, the News and Observer of Raleigh, taking issue with the project. On that note, Mr. Chairman, I would be glad to try to respond to any questions.

Mr. ROE. Thank you.

Do I understand from your testimony that the National Wildlife Federation is opposed to any jetties period?

Mr. OSANN. We are opposed to the authorized project, Mr. Chairman.

Mr. ROE. I didn't ask you that. Are you in favor of any jetties in this project at all?

Mr. OSANN. We haven't seen a jetty proposal that we can support.

Mr. ROE. So what you're saying is what the corps has presented you cannot support.

Mr. OSANN. That's right.

Mr. ROE. What would be your suggestion then? You're a responsible representative of a responsible organization. What would be your solution to the problem? You're sitting on that side of the table. How would you look at it?

Mr. OSANN. The dredging alternative has been disparaged by a number of witnesses before the committee, but I think that the point that the Interior Department has made is a valid one. That is that an expanded dredging program ought to be tried on a real trial basis. And notwithstanding the fact that there has been dredging going on to maintain a 14-foot channel, as I understand it 1984 was the first year that a hopper dredge actually operated in there rather than the side casting dredges.

So, I think that for a couple-year period we ought to give the accelerated dredging program a chance to work.

Mr. ROE. So, in effect what you're saying, from your vantage point, you'd be looking to the committee to consider additional dredging and going on with a dredging program for a while?

Mr. OSANN. Yes.

Mr. ROE. The gentleman from Minnesota.

Mr. STANGELAND. Well, I'm just wondering, I guess, to pursue that, as the alternative, and looking at the escalated dredging costs that they're citing now, going back 20 years and a million a year, that's not a big sum of money, but if it goes to 4 and then to 6 and then to 8, you know, in 10 to 12 years we can expend the cost of the project and we can go on ad infinitum for 20 years, 30 years, and 40 years.

Mr. OSANN. Can I respond at that point, Mr. Stangeland? I think that the projected operation and maintenance of the completed project is in the neighborhood of $7 million a year.

Mr. STANGELAND. Well, we will ask for those kinds of figures, those estimates.

Mr. ROE. If the gentleman will yield, when the chairman spoke this morning of cost/benefit ratio, there is nobody in this Government that has gone into that cost/benefit ratio system more than we have on this committee.

And I'm telling you something, that when you go and you say who does this affect, who does this channel affect when you're talking about cost/benefit ratio. And it seems to me that if we're looking at cost/benefit ratio, and we're looking at the vast areas it af-

fects, when the corps does some of its work. We're changing some of those policies, as you know, to get a real, true evaluation of the cost/benefit ration.

And to take a little isolated area and to say that's it, that's not the effect. This is the effect up to 127 miles up and down that coast. And all of those people that are affected.

So, when we use a—phony is the word I used this morning for the record—cost/benefit ratio to kill this, that doesn't decide the program. It doesn't decide the answer to the problem.

What we're looking for here is some kind of a balance. It seems to me that even the Interior Department did not take the position as far as they were concerned, that they were flat out opposed to a jetty or a jetty system.

They were concerned about the modus operandi, how it would work, would it achieve their goals, and would it have an impact upon primarily their fresh water pools, as I understood it, and the building up of that 3 miles of beach down there.

Isn't that pretty much what they testified to? So you're coming back and saying in spite of all the evidence and testimony we have now, that your view would be OK, leave it alone, do some more dredging. Basically that's what you're saying?

Mr. OSANN. That's correct. The position that our organization takes on water resource development projects of all types is that we will only support those that have been demonstrated to be economically feasible and environmentally acceptable. And we don't believe that the record is clear enough on either of those points with respect to the Oregon Inlet project.

Mr. STANGELAND. On the question of environmentally acceptable, would you dispute the figures this morning saying that the jetties would in effect stabilize and protect the beaches for 4 to 6 miles up and about 3, I believe the testimony was, down to where because of the shifting of the currents around those jetties you were not going to have any beach erosion in that stretch of 7 to 9 miles? And in exchange, you risk a higher erosion 5 miles beyond the south jetty for about 3 miles where is the sand transfer works you're going to have beach enhancement.

You would dispute those figures at all?

Mr. OSANN. I'm not prepared to dispute them. My understanding of coastal dynamics is such that there is some shadow of influence of the structures.

Mr. STANGELAND. Isn't there somewhat of a trade off here, just a little bit, from the Wildlife Federation's point of view? I mean, isn't that somewhat of a compromise, where you project some from any degradation, while you do risk some degradation in a very smaller portion, and then take into account that you've got 43 percent of the coastal line now in Federal ownership, protected, a good deal of it will not be protected. So you do have habitat.

I'm concerned about habitat, too, because I like to hunt, and I like the wild game, and I like to see them there, not just to hunt them, but to see them there.

Isn't there a possibility of a trade-off here. The cost/benefit ratios, frankly, disturb me greatly. An example that really isn't comparable to this, but we have a town up in Pennsylvania that one flood cost far, far more than the flood protection would cost.

And yet that prevention of that 50- or 100-year flood cannot be counted in the C/B ratio. And that's ludicrous to me. If we went and spent the money once, we would preclude that horrendous cost ever again.

And yet it can't be entered in the C/B ratio. C/B ratios just kind of disturb me because I don't think they take into account all of the conditions and all of the situations that you ought to be looking at, the health and safety thing, to the benefit of a lot of people.

And, I guess I'm not all sure—there is testimony here that one storm can undo all the dredging has accomplished in months, just like that. And that seems like a taxpayer waste, too.

Mr. OSANN. Well, I think to respond to your initial question about trade-offs, there are trade-offs in all aspects of public affairs. There's no question about that.

Right now we're not convinced the trade is legal. There are many, as this committee knows better than most, there are many water resource development problems around the country that are crying out for resolution.

The problem is we don't have that many chunks of $100 million to go around sprinkling on all of them. And we need to find those where the dollars that are available can be targeted to do the most good in an environmentally acceptable manner.

Mr. ROE. I don't disagree with you on cost/benefit ratios in that sense, but let me tell you something: This committee has to decide. Let me philosophize for a minute. You know, the least of us is important to the most of us. I come from New Jersey, and you know, on the Passaic River, we cry out for a solution. We've lost hundreds of people over the last 25 years, who have drowned and so forth.

There may be another project in Pennsylvania that is just as important, as I'm sure there's one in Texas, or there may be one, in this instance, in North Carolina. After all, nine people did lose their lives.

There is a human factor involved. And I wonder who in this Government can produce a cost/benefit ratio to one life.

I mean, who evaluates that? Who is Solomon in that? So this committee comes back and says I'm not going to deny something in a small community because they can't raise the cost/benefit matching funds. But they have to sit and sweat it out or they drown, or some other wealthier community can here. That is fundamentally unfair under a democratic form of government.

So we have to protect everybody. And it seems to me when we start talking about what we should be doing here, it's far beyond the point of just making a decision as to whether or not the sand is drifting one way or the other.

The question I would like to ask you is does the Federation have any expertise, any scientific expertise? Where does the decision process come from?

Do you just evaluate—and I'm only asking because I don't know—does your organization say well this is what the corps is presenting, this is what the State is saying, this is what the people are saying. But we just don't agree, we think it should be done this way.

On what basis do they make that decision? You represent these thousands of people, and it's a very splendid organization. Who makes that determination in your organization?

Mr. OSANN. We have a resolution process like most nongovernmental organizations. We have an annual meeting where resolutions and policies are considered, as do our affiliates.

And our affiliate in North Carolina is on record opposed to this project in particular.

Mr. ROE. For what reason? Other than we think this may happen or we don't like it, or whatever. I haven't seen that reason.

I'm not trying to be obstreperous. But I'm trying to nail this down, because you've testified before us and very effectively many times. But I'm trying to get at is who in the federation has evaluated this program and looked at the whole situation and said we don't look think it should be done that way. Who has the right to make that decision for the organization? Have all those people been subjected to the facts that we've been listening to? Of course they haven't.

Mr. OSANN. We, as I started to say, we have a resolution process, Mr. Chairman, and we, over the past 10 years or so, we've probably had 50 or so resolutions dealing with some aspect of water resources projects or policies.

We don't pass resolutions on specific Corps of Engineers of Bureau of Reclamation Water Projects, but we have general resolutions dealing with water resource development policy. And as I mentioned to you that our policy generally on these matters is that we support the wise use of natural resources. We do not support water resource development projects unless they are demonstrated to be economically feasible and environmentally acceptable. And in this case, we have a circumstance, a rather unusual circumstance, where the Corps of Engineers itself and the Department of the Army has indicated that the economic feasibility of this project is not established.

Mr. ROE. Thank you very much for your testimony.

Our next witness is Mr. William Lienesch, who represents the National Parks & Conservation Association, and is their assistant director of Federal activities.

Mr. Lienesch, the full test of your prepared statement will appear in the record at this point.

[Statement referred to follows:]

STATEMENT OF WILLIAM C. LIENESCH, ASSISTANT DIRECTOR OF FEDERAL ACTIVITIES, NATIONAL PARKS & CONSERVATION ASSOCIATION

The National Parks & Conservation Association (NPCA) appreciates the opportunity to testify on H.R. 3082. For over 60 years, NPCA has worked to ensure the long-term protection of the National Park System.

Title IV of H.R. 3082 would transfer lands at Cape Hatteras NS and Pea Island NWR to the Corps of Engineers so that the Corps can carry out the Manteo (Shallowbag) Bay project. This project, which is economically and environmentally unsound, would involve the construction of jetties at Oregon Inlet. Attached to this testimony is a copy of an article from the December 1980 issue of our magazine. Although somewhat dated, this article describes many of the potential problems associated with this project.

The National Park Service is legislatively mandated to preserve the Cape Hatteras barrier islands in a natural state for the use and enjoyment of both present and future generations. The enabling Act states the "area will be permanently reserved

as a primitive wilderness and no development . . . for the convenience of visitors shall be undertaken which would be incompatible with the preservation of the unique flora and fauna or the physiographic conditions now prevailing." The proposed project is clearly at odds with the spirit of this mandate.

Others testifying today have discussed the economic problems of this proposed project in detail. It is clear that the project is extremely expensive and does not have a positive benefit/cost ratio. Even if the project were cost effective, its huge cost would make it very questionable.

From our standpoint, the environmental effects of the proposed project on Cape Hatteras NS and Pea Island NWR are even more troublesome. The project would cause severe erosion and loss of habitat. Proponents of the project have argued that the proposed sand bypass system will alleviate many of the negative effects of this project. However, this system is largely untried and there is no assurance that severe beach erosion problems will not occur.

The safety of fishermen using the inlet is a serious concern. Recent experience with improved dredging indicates that more effective dredging can make the inlet safer. This is a viable alternative to the construction of the jetties.

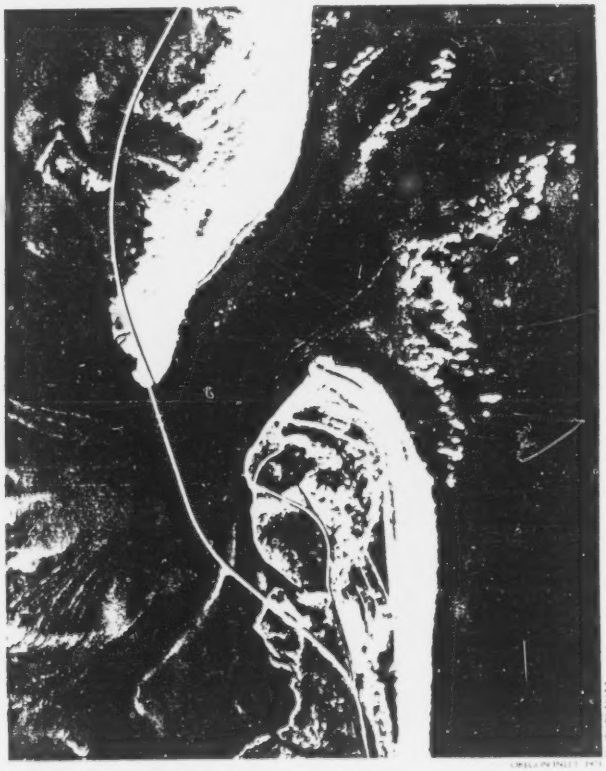
After many years of futile attempts, the National Park Service has learned the difficulties of trying to control the natural dynamics of barrier islands. With the passage of the Coastal Barrier Resources Act, Congress recognized the need to restrict federal expenditures on barrier islands along the Atlantic and Gulf coasts. While this Act does not affect federal property, it is precisely this type of project which the Act calls into question.

We appreciate the opportunity to submit this testimony and would be happy to provide any additional information the Subcommittee may request.

by DENNIS BREZINA

Ignoring the lessons of the past, the Corps of Engineers persists in its plans for . . .

# The taming of OREGON INLET

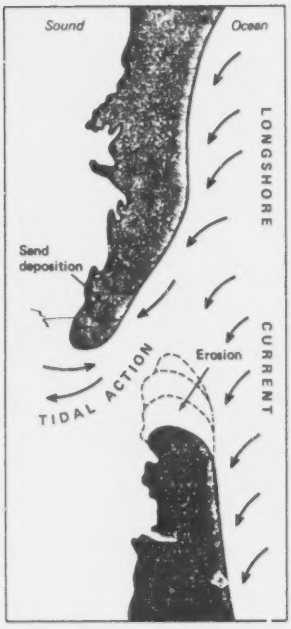


IF THE U.S. Army Corps of Engineers has its way, it will try to stabilize the shifting Oregon Inlet of the Outer Banks of North Carolina with two giant stone jetties in order to protect the Bonner Bridge and to provide easy access for commercial fishing boats between the town of Wanchese and the ocean.

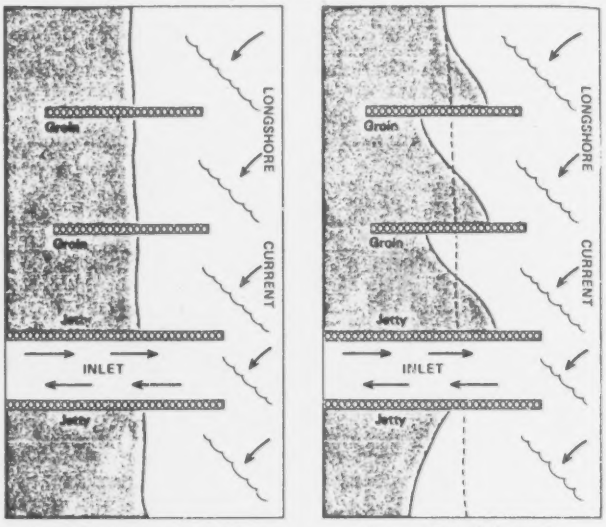
The twin jetty proposal to stabilize the inlet—"Manteo (Shallow Bag) Bay Project"—though fraught with adverse and unknown environmental implications, raises many fundamental questions: Can the Corps construct jetties that actually can resist the power of ocean storms? Will the jetties prevent the Oregon Inlet from continuing its southward journey of 134 years? Will the crucial process of sand by passing work? Will the jetties permanently secure the safety of the overarching Herbert C. Bonner Bridge? Will they halt the westward movement of the delicate barrier islands?

The National Parks & Conservation Association, the Department of Interior, and many other conservationists do not think so.

INLETS on barrier islands are constantly being reshaped by currents, waves, and tides. Only "temporary" in nature's scheme, inlets




**Inlet Dynamics**




DIAGRAMS & MAP BY JAMES F. O'BRIEN • NPCA

*Outer Banks inlets migrate naturally southward as sand is deposited on their north sides and eroded away on the south by longshore currents (left), but structures designed to control inlet dynamics cause exaggerated patterns of buildup and erosion (above) as well as new inlets at vulnerable points.*

are channels between the open ocean and the more sheltered sound behind the barrier islands.

On the Outer Banks, longshore currents carry sand in a generally southward direction across and into inlets. The sand thus deposited inside the inlet becomes the site of new marshes that gradually stabilize and elongate the island on the north side of the inlet. At the same time, the south side of the inlet is gradually eroded away. Thus inlets move inexorably southward.

During storms, inlets function as natural safety valves. When storm-driven waves combined with high tides back up water in the sound, a tremendous amount of water pressure builds up. When the pressure is released, the rush of water can blow the shoals out of the inlet like a cork out of a champagne bottle. But if the inlet cannot expand because it is bounded by jetties, the water pressure can flood the barrier islands and force another inlet through the barrier island in another location.

This process is greatly intensified at Oregon Inlet because of the large expanse of Pamlico Sound, the several large rivers flowing into the sound, the steep slope of the Continental Shelf, and the northeast orientation of this section of the barrier islands.

Oregon Inlet, separating Bodie and Pea islands within the Cape Hatteras National Seashore and the Pea Island National Wildlife Refuge, was formed by a water breakthrough from Pamlico Sound after a hurricane in 1846. Since then Oregon Inlet has drifted southward at the rate of 75 feet per year—a total distance of two miles. Add to this motion the five to six feet per year that the barrier islands move westward toward the mainland, consider a yearly net transfer south of at least 500,000 cubic yards of sand across the mouth of the inlet, and the word "volatile" comes to mind.

NPCA HAS criticized the Corps of Engineers plan, saying that the Oregon Inlet proposal is "reminiscent of the beach erosion control program operated by the National Park Service in Cape Hatteras

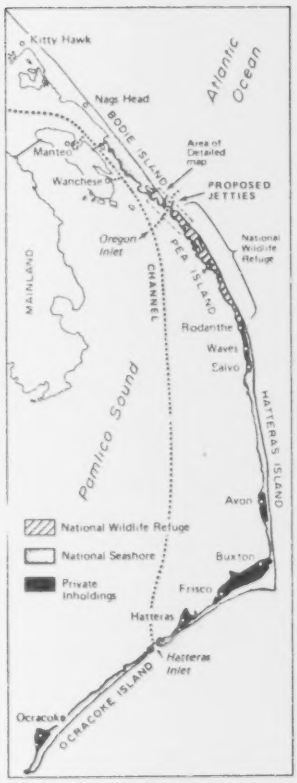
from 1936 until 1973. After nearly 40 years of effort [and $20 million in federal funds], the National Park Service and the Department of Interior concluded they couldn't fight nature and determined to no longer attempt to stabilize the shoreline."

But the Corps is not impressed with the Park Service's experience on the Outer Banks, and the battle lines are drawn.

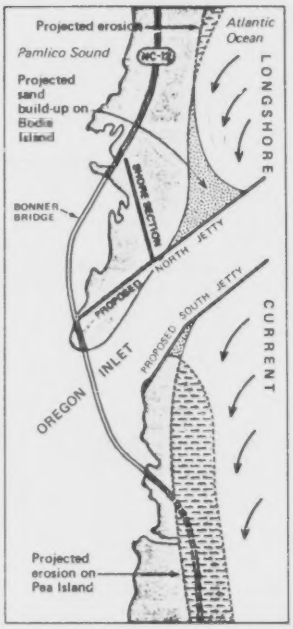
The call to stabilize Oregon Inlet, first sounded in the 1930s, was amplified when the Bonner Bridge was built across the inlet in 1963 to replace ferry service. By 1970 the project had a price tag of $10 million; and today a developing commercial fishing industry in nearby Wanchese is used to justify spiraling costs of at least $70 million.

The twin jetties, nearly four miles in length, will each require 2,000,000 tons of rock and more than three years to build. About 66 acres of park land and wildlife refuge will be committed permanently to construction, maintenance, and sand-bypassing operations. Sand bypassing will be necessary because, once completed, the jetties will trap the sand that normally flows north and south across the mouth of the inlet. A minimum yearly accumulation of 500,000 cubic yards of sand behind the north jetty—equal to the amount currently being dredged from the inlet—must be dredged and transferred to the opposite side.

Disruption by the jetties of the natural flow of sand in both directions will occur in what is now the area of greatest beach erosion on the Outer Banks. Already the graceful and serene beaches within three miles of the inlet lose about 8.5 acres of beach each year. During a blizzard in the winter of 1979–80—like many other severe storm periods in the past—several houses north of the inlet slid down the eroding dunes. Two years ago, after the shifting inlet had undermined its pilings, a section of the Bonner Bridge suddenly dropped eleven




**Proposed Stabilization of Oregon Inlet**




**Long-Range Effect of Proposed Jetties**

*Oregon Inlet moves southward about 75 feet a year. Proposed stabilization jetties would accelerate normal buildup and erosion patterns, threatening refuge and seashore land, as shown above.*

inches, halting traffic and threatening to cut off electricity to Hatteras and Ocracoke islands until emergency repairs were made.

At present, divers check the amount of tidal scouring around the pilings at the south end of the bridge every two weeks. Their recent finding that scouring again threatens bridge safety has caused the North Carolina Department of Transportation to contract for twenty additional 100-foot pilings to be driven at the bridge's south end.

THE CORPS' current plan would widen the channel from 100 to 400 feet and deepen it from 14 to 20 feet, to accommodate larger ocean-going trawlers from Wanchese once the jetties are completed. Additional dredging would include deepening the Manteo–Oregon Inlet Channel and the side channel to Wanchese and enlarging the harbor at Wanchese to 15 acres and deepening it to 14 feet.

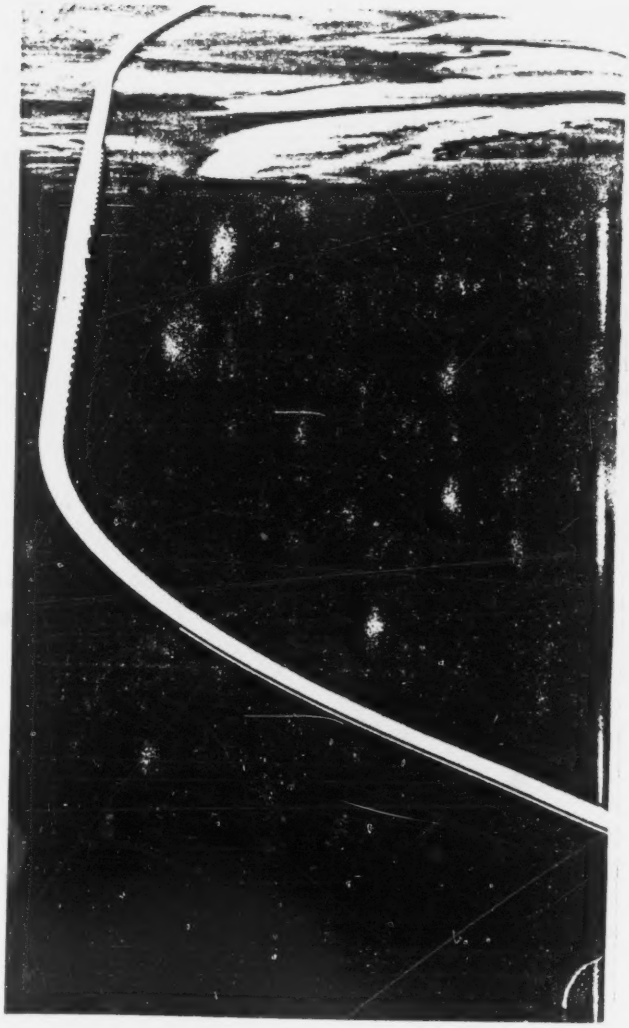
The Corps has requested $17 million in construction funds for this

project in the Fiscal Year 1981 federal budget. It also must receive right-of-way and special use permits from the National Park Service and the Fish and Wildlife Service. Yet these agencies strongly oppose the project. They believe the Corps environmental impact statement is inadequate and are hopeful that the Secretary of the Interior, possibly with the intervention of the Council on Environmental Quality (CEQ), will force the Corps to consider less expensive and less environmentally destructive alternatives.

During August 1979 the Park Service convened an Evaluation Committee, composed of four prominent coastal scientists, to review the Corps proposal. Each of these experts expressed serious doubts about the jetty design, the sand-bypassing scheme, and the potential environmental impact.

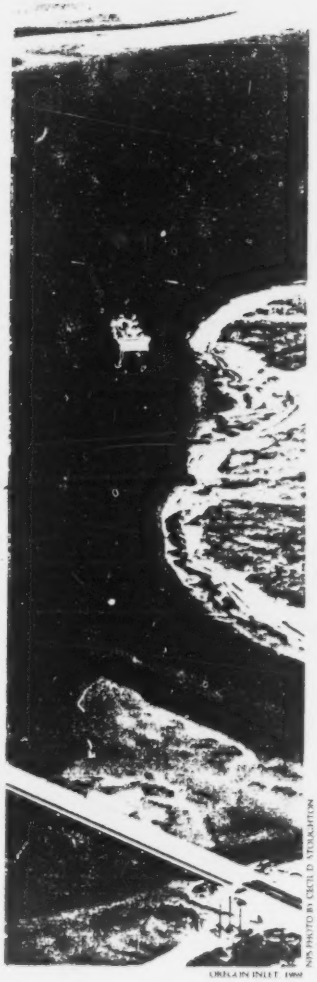
The Corps originally planned to install sand bypass doors to permit frequent access of a pipeline dredge to remove sand built up behind the jetties. Once physical model tests and other design analyses indicated that the speed of the water flowing through the open doors could undermine the jetties, the Corps decided against this approach. Instead, they propose that a dredge, operating in the ocean and protected from wave action by an untested floating breakwater, pass sand during the calmer summer months only. This season of relatively little sand build-up contrasts sharply with the periods of fierce storms and greatest sand accumulation—fall, winter, and spring. Such an *infrequent* dredging cycle, as distinguished from the *frequent* bypassing the Evaluation Committee deems essential, will disrupt the natural day-to-day flow of sand.

Other likely consequences are equally controversial. The jetties, protruding almost a mile into the shoal waters known as The Graveyard of the Atlantic, might, by causing even more rapid beach and dune erosion along Pea Island to the south and accelerated build-up to the north, create a "Cape Oregon," further endangering shipping in an already dangerous sea lane. The intensified chewing away of Pea Island National Wildlife Refuge will probably require a complete reorientation of present refuge management policies because some of the dikes surrounding waterfowl impoundments could wash away within ten years. The immovable jetties will also prevent the inlet from expanding after hurricanes and other serious storms when an abnormally large volume of water flows out of the sound into the ocean. Such a situation could cause a new inlet to





33-653 O—84——9



OREGON INLET, 1980

NPS PHOTO BY CECIL D. STOUGHTON

blow out nearby—possibly in the town of Nags Head or beside one of the jetties.

The ecological consequences for wildlife and marine life will be substantial. The nesting grounds of loggerhead turtles as well as terns and gulls will be disrupted. The distribution, abundance, and movement patterns of plankton and other organisms may change, with no one knows what effects on commercial and sport fishing. During construction, the project will interrupt sport fishing at the inlet as well as necessitating temporary closing of the parking lot and visitor facilities on the south side.

The Corps, giving short shrift to less costly alternatives, argues that a continuation of the present dredging will restrain the growing fishing industry in Wanchese because deeper draft trawlers could not safely navigate the inlet. Yet, these larger trawlers could steam down Pamlico Sound and out a deepened Hatteras Inlet 65 miles to the south. The additional distance, free of any bridge to pass under, would cost fishermen some extra time and a small increase in fuel—at a savings of $70 million or more for the taxpayer. Dismissed as too expensive is the option of deepening the existing channel with larger dredging equipment. Yet, a modified trailing suction hopper dredge could operate for 15 years before exceeding the estimated costs of the jetty project.

Because the southward drifting inlet is now within 400 feet of its southern end, after the next major storm the Bonner Bridge could become "The Bridge to Nowhere." The Corps has not addressed the question of bridge safety in its impact statement, avoiding a politically unwise confrontation with the National Park Service over unlimited growth of Hatteras Island (almost a third of which is privately owned land). Nevertheless, the rate of development of Hatteras Island, inextricably tied to the long-term use of this lifeline and of deep concern to powerful banking and real estate interests, dwarfs the economic issues associated with the future of commercial fishing in Wanchese.

IN WASHINGTON, David Hales, Acting Assistant Secretary of the Interior for Fish, Wildlife and Parks, wrote the Corps about the department's opposition to the stabilization plan on January 17, 1980. He admonished the Corps that by its response to the supplemental environmental impact statement the Department of Interior "does not exclude the possibility of exercising its option for further action as provided under the Council on Environmental Quality's NEPA regulations."

If the Department refers this issue to the council, CEQ must act as a mediator between the two agencies to resolve the issues—a process that could take from several months to a couple of years. During this time the Corps is precluded from proceeding with the project even if funds are appropriated for it.

The Department of Interior does not believe that the Corps final supplemental impact statement—released on October 14—will satisfactorily answer the issues raised in the department's January letter and at subsequent meetings with the Corps. In addition, Robert Herbst, Assistant Secretary of the Interior for Fish, Wildlife and Parks, has clearly stated in an August 1980 letter to the Corps, that the Park Service lacks the statutory authority to originate a special-use permit for any project that will use park property in a manner inconsistent with the purpose intended by Congress for the seashore.

In the meantime, the Corps of Engineers' persistence in attempting to confine a dynamic inlet with inflexible stone jetties seems to reflect neither the "can do" spirit of the 1980s nor the lessons of past experience. As an old resident of the Outer Banks expressed it, "Stabilizing Oregon Inlet will be as easy as taming a hurricane." ■

**Free-lancer Dennis W. Brezina has published widely on environmental issues, military and foreign affairs, history, travel, and inspirational pieces and is author of *Congress in Action: The Environmental Education Act*, The Free Press, 1974. He lives in Harwood, Maryland.**

Mr. ROE. Please proceed.

**TESTIMONY OF WILLIAM C. LIENESCH, ASSISTANT DIRECTOR FOR FEDERAL ACTIVITIES, NATIONAL PARKS & CONSERVATION ASSOCIATION**

Mr. LIENESCH. Thank you, Mr. Chairman.

My name is Bill Lienesch. I'm with the National Parks and Conservation Association which is a nonprofit citizen based group founded about 60 years ago interested in the preservation of our national park system.

I'll not read our testimony, and actually I would like to try and address in a sense some of the questions I think might be forthcoming from yourself and from Mr. Stangeland and based on some of the questions that have been raised throughout today.

You have asked a series of very good questions concerning the effects of the project. And many of those questions I honestly believe no one can give you a definitive answer.

You asked the previous witness how did they base their position, which ours is like theirs, in opposition to the project. And that's by going through, in our case, the scientific record as best we can.

And there are certain individuals, certain scientists, that have looked into the project that are not testifying here today that I think have something to say about the project, and the probable effects, the likely effects, what they think based on their scientific knowledge would occur.

And I think it would be good if we could enter into the record and we can furnish you with some of their studies and some of their testimony and so on before other panels.

Mr. ROE. We would like that. Without objection.

[The following was received for the record from Mr. Lienesch:]

NATIONAL PARKS & CONSERVATION ASSOCIATION,
*Washington, D.C., February 15, 1984.*

Hon. ROBERT A. ROE,
*Chairman, Subcommittee on Water Resources, Room 2165, Rayburn HOB, Washington, D.C.*

DEAR CHAIRMAN ROE: At the hearing on the Manteo (Shallowbag) Bay Project I promised to provide additional information for the record. Enclosed is that information. Included is testimony by Dr. Orrin Pilkey and Dr. Stanley Riggs before the Subcommittee on Public Lands and National Parks. A copy of the Inman group study is also enclosed. This study is included in the hearing record of the Subcommittee on Fisheries and Wildlife Conservation and the Environment.

The enclosed information raises serious concerns about the environmental effects of the proposed project. Many but not all of these concerns were discussed during the hearing last week. I am sure that any of the scientists who have examined this project would be happy to discuss their findings with you or members of your staff. Please let us know if we can provide any additional information.

Sincerely,

WILLIAM LIENESCH,
*Assistant Director of Federal Activities.*

Enclosure.

PREPARED STATEMENT OF ORRIN H. PILKEY, JR., PROFESSOR OF GEOLOGY, DUKE UNIVERSITY

I am a James B. Duke professor of Geology specializing in coastal and marine geology. I have published more than 80 technical papers in my field and have written or edited more than a dozen books. I have written two books on North Carolina shoreline development problems, one book on shoreline development on a national scale, and I am presently co-editing a series of 22 books on each coastal and Great

Lakes states which emphasize site specific safety of development. I am former President of the North Carolina Academy of Science and the present president-elect of the Society of Economic Paleontologists and Mineralogists.

I oppose construction of the Oregon Inlet jetties. The following are the principal reasons for my opposition:

(1) Stabilization of an unusually dynamic inlet with very large jetties for the benefits of a small fishing industry is an outdated approach. It flies in the face of overwhelmingly evidence such as New York's south shore, the Texas coast, and the South Florida coast, that in the long run jetties cause severe environmental damage, sand bypass systems or not. The heavy recreational use of our shorelines makes this damage unacceptable. In 1982, a white paper signed by two-thirds of American coastal geologists called for a turnaround in the management of the American shoreline and a halt to stabilization projects such as Oregon Inlet.

(2) Every jetty is an engineering experiment. Highly competent physical and mathematical modeling such as that done by the Corps Waterway Experiment Station in Vicksburg, Mississippi is useful for jetty design criteria, but is quite speculative with regard to the environmental impact of jetties on adjacent beaches. Nobody has ever correctly predicted the long range environmental impact of jetties (other than to say the impact will be negative) and Oregon Inlet is no exception.

(3) I anticipate that long range damage in the form of increased shoreline erosion can be expected for many miles, both to the north and the south of Oregon Inlet.

(4) The sand bypass system will almost certainly not prevent accelerated beach erosion south of the jetties. There are a number of problems:

(a) This system cannot respond during bit storms when huge amounts of sand are moved in a few hours. Severe beach erosion, either to the north or south, will result.

(b) There is no assurance that the funds needed to bypass sand will be available in the future. Future administrations will cut sand bypass funding long before channel maintenance funds will be dropped.

(c) Sand bypass systems have never worked elsewhere. Sometimes they have reduced the extent of erosion "downstream" from jetties, but they have never halted jetty related shore damage. For example, note the strong shoreline offsets at jetties in Florida with bypass system.

(d) Design of the sand bypass system for the Oregon Inlet jetties is not yet complete. When, and if, the design is complete it is optimistic in the extreme to think that this system, as yet untested in the field, will be the world's first successful sand bypass system.

(5) Intensified channel dredging offers a reasonable alternative to jetty construction. A new channel is working right now, halfway through the fishing season. It is important to emphasize that the Corp's present economic comparison of dredging with the jetties is based on a 20 foot channel in spite of the fact that a 14 foot channel will suffice for the Wanchese fishing fleet. the Corps has not evaluated the 14 foot channel because vessels cannot navigate the 14 foot channel during a storm. However, very few east coast inlets can be navigated safely during a storm. There is no justification for throwing out the 14 foot channel alternative, as the Corps has done.

(6) The dredging alternative leaves open a number of future management alternatives, including jetties.

(7) The Wilmington District, in contrast with its long record of sound coastal engineering projects, has, in this instance, acted irresponsibly and with arrogance. In a series of discussion and orientation with fishermen, state officials, and coastal plain citizens groups, it has presented a positive view of the jetty project unjustified by the facts and vice versa for dredging alternatives. The District virtually defied the Senate appropriations subcommittee in evaluating only the 20 foot channel and not the 14 foot channel dredging alternative. The District was informed by several citizens about the giant "miscalculation" in the cost/benefit ratio, later described as a "fundamental error" by Assistant Secretary of the Army, William R. Gianelli. Colonel Hughes, then District engineer, wrote to one citizen that no review of the cost/benefit study was legally required and therefore it would not be carried out. Perhaps most frustrating of all has been a virtual stream of statements and actions denigrating the likelihood of success of dredging alternative.

Whether these are described as lack of objectivity, intellectual dishonesty, or strong partisanship, the actions of the Wilmington District in stifling opposition to the jetty project is a frightening role for any federal group to play. The people of North Carolina have been denied an objective dialogue on the Oregon jetty issue because of the Wilmington District.

(8) Lastly, the governor of North Carolina, James B. Hunt, can rightly claim a large share of the credit for our states highly successful coastal zone management

program. The very quality of this program makes it all the more imperative that we do not carry out a major shore hardening project at Oregon Inlet that will start us down the road of the South Florida and New Jersey shores. In his statement before this subcommittee Governor Hunt noted that if the Oregon Inlet jetty and sand bypass system worked, it could be used as a model for other inlets. I submit that a much more far reaching and profound example will be set by dredging a channel instead of building one more set of massive, immovable and environmentally damaging jetties.

---

STATEMENT BY DR. STANLEY R. RIGGS, PROFESSOR OF GEOLOGY, EAST CAROLINA UNIVERSITY, GREENVILLE, N.C.

My name is Stanley R. Riggs. I am professor of geology at East Carolina University, where I have been since 1967. For the past 18 years I have had an extensive research program concerning the geology and natural history of North Carolina's coastal system with extensive funding from the State of North Carolina, N.O.A.A. (through the North Carolina Sea Grant College), and the National Science Foundation. I have had numerous research grants dealing specifically with shoreline erosion and inlet processes, served on several Governor's Commissions on coastal erosion, published over 25 major papers, books, films, etc. on various aspects of North Carolina's coastal system, and was awarded the 1983 O. M. Gardner award by the University of North Carolina Board of Governors. This award, presented to an individual who has made major "contributions to the welfare of the human race," represents a significant recognition of my work with coastal systems.

My research program for more than half of these 18 years has dealt directly with the geologic processes operating within the northeastern N.C. barrier islands which include Nags Head, Cape Hatteras National Seashore, and Oregon Inlet. I have an extensive data base throughout this area, which includes thousands of kilometers of shallow high-resolution seismic lines; hundreds of core holes including deep holes on the barriers and shallow vibracores across the beachface, inner shelf, and throughout the estuaries; as well as extensive process-response studies monitoring shoreline and inlet changes through storm cycles and through time, etc.

My opposition to the construction of the proposed Oregon Inlet jetty system is based on my scientific knowledge of natural processes operating within this high energy northeastern N.C. coastal system. Hardening of this inlet, which is an integral component of a larger and extremely dynamic and changing barrier island system, will cause major short- and long-term changes and readjustments to the adjacent coastal systems. The precise nature of most of these changes can only be poorly predicted, at best; but they will occur and they will cause increasing problems with utilization and management of this coastal system.

I am opposed to the construction of the Oregon Inlet jetty system on the following grounds.

1. Shoreline erosion: A jetty system of the size proposed for Oregon Inlet will modify the shape, size, and geometry of the ebb-tide delta. This will cause upstream and downstream responses and readjustments of the shoreline over distances up to 10 miles, which is the extent of present shoreline response to Oregon Inlet processes. This entire region is severely eroding in response to the present inlet system; modifications to the present system will modify the erosion patterns with a high probability of significantly increasing the rates beyond the project limits. The proposed project does NOT consider the erosion beyond the few miles which define the limits of the project. Areas such as the rapidly developing South Nags Head and highway and wildlife ponds at Pea Island National Refuge will be forced to harden their shorelines with upstream and downstream groin fields in the near future to slow down the response processes in the peripheral areas to the jetty system.

2. Sediment bypass: The proposed sediment by pass system has several very fundamental flaws associated with it. Beaches and inlets are most active during the high energy storm periods of winter; storms are the driving force behind most coastal processes. Beaches need sand during these high energy periods to absorb the energy of the waves. Consequently, a by-pass system which is only capable of operating during summer months forces us to be able to anticipate winter sediment needs up and down the coast and predict the specific type, intensity, and duration of storms through the subsequent winter months. With the proposed by-pass system, we will force the coastal beaches to "buy their sand on the time payment plan". This will have disastrous results with respect to coastal erosion; if they can wait until the summer calm comes, then hopefully we can dredge enough sand in the right direction in anticipation of the future storm patterns. good luck, particularly since we haven't even successfully designed the by-pass system which can operate within

coastal energies that occur in this area during the summer. Gambling with the future of the Cape Hatteras National Seashore in this way is ludicrous.

3. Inlet restriction: Inlets, or outlets as this one should be called, act as self-adjusting safety valves which open-up and close-down in response to changing hydraulic pressures. The construction of this jetty system will harden the inlet, preventing the natural responses from operating. I believe that there is a very high probability that this restriction will cause increased storm flooding within the estuarine coastal areas and will blowout a new outlet either adjacent to the jetties or through other weak zones in the barriers.

4. Model studies: The Oregon Inlet jetty system and the proposed sediment bypass system are based on extensive models. However, the models are developed from very limited on-site oceanographic data. Most of the data that is used is based either on theory or has been obtained during low energy conditions when oceanographic measurements can be made. We do not understand coastal processes operating during the extreme energy conditions of a major storm. What an expensive and potentially catastrophic experiment this jetty system could be if our theoretical and wave-tank models aren't correct!

5. Justification of project and alternatives: Development of the Wanchese Harbor was done with the total understanding of independence of the jetty system. Now the cart is pushing the horse. The fishermen do have a real problem with Oregon Inlet; however, there are alternatives which must be considered before we commit ourselves to the unknowns of the proposed jetty system.

The important thing is to solve the fishermens problems without creating devastating and costly shoreline problems. New dredging techniques must be tested; if these work, then they would have a relatively minimal negative impact upon the adjacent coastal system.

The fact that Congress authorized this project over 10 years ago, does not prove that it can be done or that it should be done. The Oregon Inlet jetty system has become a political project which totally disregards the natural processes operating within this dynamic coastal system. We should not feel obligated to perpetuate a bad decision. Please help the barrier islands—they don't have a vote in this most important issue which will severely impact their future and ours.

If anyone has any questions that I might be able to help you with, I would be more than willing to entertain them. Thank you for your time and consideration.

[From the hearing before the Subcommittee on Fisheries and Wildlife Conservation and the Environment of the Committee on Merchant Marine and Fisheries, House of Representatives, Ninety-Eighth Congress, First Session, on H.R. 3288, A Bill to authorize the Secretary of the Army to use certain lands in connection with the navigation project for Manteo (Shallowbag) Bay North Carolina, August 3, 1983]

* * * * * * *

REPORT ON THE POTENTIAL EFFECTS OF THE PROPOSED OREGON INLET JETTIES ON SHORE PROCESSES ALONG THE OUTER BANKS OF NORTH CAROLINA

During August of 1979, the National Park Service retained the services of four coastal scientists to review the U.S. Army Corps of Engineers' plans to stabilize Oregon Inlet by constructing two rock jetties and related engineering work. The Review Panel included Dr. Douglas L. Inman, Professor and Director of Coastal Oceanography, Scripps Institution of Oceanography, La Jolla, California; Dr. John C Kraft, Professor and Chairman of the Department of Geology, University of Delaware, Newark Delaware; Dr. Robert A. Dalrymple, Associate Professor of Marine Engineering, University of Delaware, Newark, Delaware· and Dr. Robert Dolan, Professor, Department of Environmental Sciences, University of Virginia, Charlottesville, Virginia. The Panel member's areas of expertise are as follows: Dr. Inman, inshore processes; Dr. Kraft, geology of barrier islands; Dr. Dalrymple, coastal engineering and inshore processes; and, Dr. Dolan, barrier island processes, especially the history of erosion and overwash along the Outer Banks of North Carolina. These specialists have combination of over 75 years of research experience in coastal processes and coastal engineering; they have published over 300 reports, journal articles, and books; and, they have visited coastal sites in more than 30 nations around the world.

The Review Panel meeting was held in Manteo, North Carolina, on August 12, 13, and 15, 1979. The procedure included an in-depth review of the U.S. Army Corps of Engineers plans, their EIS, and the EIS supplements; a briefing by National Park Service and Fish and Wildlife Service personnel; and, on-site visit to the proposed project area. Following this review of background material and a group discussion, each Panel Member was asked to summarize in writing his opinion of the potential short-term (1 to 3 years), intermediate-term (5 to 10 years), and long-term (10 to 50 years) implications of the project. The following paragraphs summarize the individual Review Panel reports:

(1) *Short-term implications.*—The Oregon Inlet jetties will have significant impact on the shorezone processes along the Outer Banks. Land areas adjacent to the inlet will be greatly altered. The Panel was unanimous in its concern about modifications in sand transport processes along the coast, and the plan for sand to bypassing, including the annual to bi-annual schedule. Without a very efficient sand bypassing scheme, negative environmental impacts of the project will be maximized.

Regardless of statements to the contrary, the jetties, as designed, will probably (or surely) accelerate already high erosion rates adjacent to the inlet. Pea Island for 2 to 5 miles south of the jetties will undergo rapid beach and dune erosion, dune breaching, overwash, and associated flooding. The rate will be far in excess of the Department of Interior's concept of a "normal" for the Outer Banks. The transition from a policy of managed and stabilized landscapes to a policy of islands existing in a somewhat natural condition will surely be tested. In fact, assuming either annual or less frequent sand bypassing, Pea Island will probably undergo such rapid and highly variable changes that the present refuge management policy will require reassessment.

(2) *Intermediate-term implications.*—Alteration of normal longshore sediment movement by construction of the jetties will probably cause serious erosion problems well beyond the project area. Shoal areas that presently serve as important substrate for marsh grasses, as well as feeding and nesting areas for birds, will be greatly modified. The jetties will also result in significant alteration in the water masses passing into and out of Oregon Inlet, especially the exchange of fine grain sediment and organic detritus. Without mitigation the sea turtle habitat south of the inlet will be lost.

(3) *Long-term implications.*—The unstable nature of the Atlantic coast barrier islands and the potential implications with regards to the Oregon Inlet jetty system is of major concern. The barriers are migrating toward the mainland by storm overwash and inlet formation and closure. This is an indisputable fact. The geological process has been stalled temporarily along the Outer Banks by dune construction and sand stabilization. In order to maintain the jetties as functional structures, the barrier islands themselves adjacent to the inlet will also require stabilization. For the life of the Oregon Inlet project, and none of the Panel members believed it would be limited to a 50-year project once installed, barrier island stabilization may be an impossible goal without additional engineering works. Regardless, the jetties will probably require significant alteration in the future if they are to serve their purpose, including extension seaward and maintenance dredging of the channel.

(4) *Conclusion.*—The Review Panel experts have serious doubts about the advisability of stabilizing Oregon Inlet. These reservations include concern about the actual jetty design, in particular the sand bypassing scheme, and the potential short, intermediate, and long-term environmental impact, both physical and ecological.

---

REPORT NO. 2 AUGUST 7, 1980 ON THE POTENTIAL EFFECTS OF THE PROPOSED OREGON INLET JETTIES ON SHORE PROCESSES ALONG THE OUTER BANKS OF NORTH CAROLINA—NATIONAL PARK SERVICE COASTAL ADVISORY COMMITTEE

During August of 1980, the National Park Service reconvened the Review Panel of coastal scientists and engineers to consider the U.S. Army Corps of Engineers' response to the Department of Interior's concerns regarding the Oregon Inlet stabilization plan. The Review Panel included the following: Dr. Douglas L. Inman, Professor and Director of Coastal Oceanography, Scripps Institution of Oceanography, La Jolla, California; Dr. John C. Kraft, Professor and Chairman of the Department of Geology, University of Delaware, Newark, Delaware; Dr. Robert A. Dalrymple, Associate Professor of Marine Engineering, University of Delaware, Newark, Delaware; and Dr. Robert Dolan, Professor, Department of Environmental Sciences, University of Virginia, Charlottesville, Virgina.

Meetings were held in Atlanta on August 3-4 1980, for NPS briefings, then in Wilmington, North Carolina, on August 4-5, 1980, with members of the Wilmington District Office of the Corps of Engineers and staff from the Waterways Experiment Station, Vicksburg, Mississippi.

The Review Panel was asked by the National Park Service to consider all new information made available by the Corps of Engineers in response to the assistant Secretary of Interior's letter of January 17, 1980. This letter summarized Interior's concerns in the form of 11 separate issue statements. The Corps of Engineers, in turn, submitted a statement on these issues dated July 8, 1980. This correspondence represents the information available to the Review Panel at the time of the August 1980 meeting. The trip to Wilmington was intended to provide further opportunities for clarification of the two issue papers.

In the opinion of the Review Panel, this process of information exchange with the Corps of Engineers is less than successful. Much of the information essential to meaningful discussions and resolution of Interior's fundamental issues concerning the Oregon Inlet jetties is not presently available in a form that this panel or any

similar group can be expected to evaluate within a reasonable period of time. The panel went to Wilmington anticipating more summary analyses and documentation at this stage of the project; that is, after 5 years of research and 8 months before intended construction begins. We have little doubt that much of what is needed for such an evaluation exists; however, the Corps of Engineers' position was ". . . you'll need to spend several weeks in Wilmington or Vicksburg." This was not unexpected as the Corps of Engineers seldom releases design information well in advance of a construction project. When this information become available in summary form, the time period for public review is usually so short that it is impossible to respond in other than a subjective way.

The document of fundamental importance to the National Park Service is the Phase II General Design Memorandum. Based upon discussions in Wilmington, this document will be a distillation of the Corps' five-year data collection program, their analyses, and interpretations. The Corps stated that every effort would be made to provide the panel members with draft copies of the General Design Memorandum (Phase II) by October 1.

Another problem of even greater concern is that information dealing with the sand-bypassing scheme does not exist at this time in any form, nor will it be available before construction of the jetty system begins. In other words, the sand-bypassing scheme for the Oregon Inlet project, which the panel considers to be of fundamental importance, is still in the conceptual stage. The panel was told in Wilmington to be "assured that the Corps of Engineers will solve the Oregon Inlet sand-bypassing problem even though the decision on a specific plan or design will not be made until after construction of the jetties is underway." Under these circumstances it is impossible to comment on the bypassing scheme with any degree of objectivity. One must accept or reject the concept on the meager information available.

These information problems provided the context of the situation as of August 8, 1980. The following summary of observations and concerns with regard to the proposed jetty Project on Oregon Inlet is submitted for National Park Service review.

### I. OVERALL SUMMARY

Nothing has been presented by the Corps of Engineers as of August 4-6, 1980 that alters the Review Panel's serious concerns about the plan to stabilize Oregon Inlet. These reservations still include concern about the actual jetty design, the sand bypassing scheme, and the potential short-, intermediate-, and long-term environmental impact on the national seashore.

Regardless of continued reassurances from the Corps of Engineers, the Oregon Inlet jetties will have significant impact on the shorezone processes along the Outer Banks of North Carolina—specifically, land areas adjacent to the inlet will be altered. The panel was unanimous in its concern about modification of the sand transport processes near the inlet. The jetties, as designed, will accelerate already high erosion rates adjacent to the inlet. South of the jetties along Pea Island, this could lead to rapid beach and dune erosion, dune breaching, overwash, and associated flooding.

The panel still believes alteration of normal longshore sediment movement by construction of the jetties will cause serious erosion problems well beyond the project area. Shoal areas that presently serve as important substrate for marsh grasses, as well as feeding and nesting areas for birds, will be modified.

The unstable nature of the North Carolina barrier islands and the potential implications with regard to the Oregon Inlet jetty system remains a major concern. Regardless of the Corps of Engineers presentation, there is overwhelming support for the long-accepted conclusion that the barriers are migrating toward the mainland by storm overwash, inlet formation and closure. The panel considers this an indisputable fact supported by hundreds of scientific documents. It is questionable that the Corps of Engineers included competent sedimentary geologists among those working on the plan.

### II. JETTY DESIGN AND IMPLICATIONS

The plans to construct two large jetties at Oregon Inlet has involved a considerable amount of careful engineering by the Wilmington District, Corps of Engineers. However, some aspects of this project have caused concern among the panel and many other scientists and engineers. The Corps has responded in part, but several significant problems remain.

1. *Flow conveyance.*—The design of the jetties and the model testing at the Waterways Experiment Station appear to show that the jetties do not impose significant

flow constriction. The shore anchorage section on the north jetty is, in fact, designed to permit island overwash during extreme storm surge, as well as restricting the opening of a new inlet. It is not clear why a similar structure has not been designed for the south side which will be subjected to greater erosional pressures than the north side. The presence of jetties, therefore, should not cause a significantly greater amount of overwash or inlet breaching than presently can occur, nor will they prevent such events in the future.

2. *Sand stockpile during construction.*—Because the panel does not know the construction and bypassing details, it is not clear if a stockpile of sand will be placed on the beaches during the construction phase. As the jetties are built, massive rearrangement of tidal shoals and disruption of natural sand bypassing of the inlet will result. Therefore, a great potential exists for severe erosion and/or accretion to occur during construction. By having sand stockpiles available (or some other erosion mitigation scheme developed), this potential problem can be avoided.

3. *Sand tight jetties.*—In order to reduce the amount of littoral material lost to the ebb and flood tidal shoals, the jetties should be made sand tight. This also ensures that the sand will impound the fillets next to the jetties for dredging purposes. The present design calls for a concrete sheet pile within the jetty section for this purpose, but the sheet piles do not extend through the cap stone layer. Some means of producing sand tightness is necessary, otherwise sand will be transported through the jetty and into the new channel.

4. *Jetty orientation.*—The reason for the northeast orientation of the jetties has not been discussed even though the panel expressed concern about the plan. It appears, however, that the orientation is dictated by the present configuration of the inlet and the navigational constraints imposed by Bonner Bridge. Since the net littoral drift is from north to south (500,000 $yd^3$), there would appear to be an improvement in the tidal bypassing of littoral material if the inlet were oriented perpendicular to the shoreline. The present configuration, with its ebb tidal jet directed toward the net littoral drift, will hinder the natural bypass of any material.

The reorientation of the jetties, which can be accomplished either by straight jetties with the subsequent loss of a portion of Pea Island, or by using a doglegged inlet with some attendant navigational problems, will also result in shorter jetties.

5. *Floating breakwater.*—The sloping float breakwater (SFB) selected to be used in the sand-bypass scheme has not been designed or tested under prototype conditions. This breakwater is an integral part of the bypass scheme because dredges are not capable of operating offshore without some protection from large waves. It is evident from laboratory studies that the SFB can provide the measure of protection necessary if the conditions in the ocean are similar to that in the laboratory. Unfortunately, the presence of a real ocean wave spectrum with its attendant directional nature may result in conditions different from the prototype situation. Additionally, scour can occur in the field and could cause a gap to occur under the structure, reducing its effectiveness. Finally, the seaworthiness of the floating breakwater during storms is not known. With only laboratory data available, it is not clear whether the SFB is a viable means to afford protection to a floating dredge plant adjacent to the inlets. Therefore it is still not clear to the panel what the specifications of the sand-bypassing scheme will include or how effective they may be.

### III. SEDIMENT BUDGET IN THE LITTORAL CELL, CAPE HENRY TO CAPE HATTERAS

An accurate estimate of the sediment budget is essential to the design of the jetties, their impounding areas, and the design of a satisfactory bypassing system. Accordingly, the panel has requested that the Corps provide the basic data collected with interpretations for National Park Service review.

It is understood that the sediment budget includes an itemization of the sources and sinks, the transport paths, and transport rates. Further, these sources, sinks, rates and paths are subject to temporal variations that depend upon typical as well as atypical wind, wave, storm, and current conditions as well as longer-term variations such as secular and eustatic sea level, and shoreline migration.

The longshore transport rates were calculated from Nags Head wave height data supplemented by wave direction from Chesapeake Bay Light and Diamond Shoal Light (100 miles apart). The collation of data from these diverse sources into a wave budget which gives frequency of occurrence as a function of wave height, period, and direction, was also requested. The application of these data to longshore transport rates requires wave refraction diagrams for each direction and wave period class. Therefore, the panel also requested wave refraction diagrams for various localities.

A detailed listing of the annual dredging required to maintain the existing channel through Oregon Inlet, together with details of depth and location, will aid in estimating the sediment budget.

### IV. BARRIER ISLAND MIGRATION

The Review Panel was shocked at the Wilmington meeting when told by members of the Corps of Engineers that the Outer Banks of North Carolina is not a transgressive barrier island system, i.e., that the islands are not migrating landward in response to overwash and inlet formation and closure. The evidence presented was a comparison of mid-1800s maps with those dated in the 1940s. This conclusion is so contrary to existing geological evidence that making such a statement and being able to defend it would represent a scientific breakthrough of major consequence. The Review Panel does not believe the Corps of Engineers has made such a breakthrough. More likely, the conclusions they have reached are based on inadequate data that have not been correctly interpreted. For this reason, Dr. John Kraft has summarized below the accepted description of the transgressive barrier island process.

The majority of barrier islands on the mid-Atlantic coast are transgressing or eroding and moving landward at rates that have been well documented. This movement has been established upon analyses of U.S. Coastal Survey Charts of the 1840s, National Ocean Survey maps of present data, photographic evidence from the 1930s onward, the disappearance of structures into the sea, as well as hundreds of radio carbon dates. The issue is factual and cannot be reasonably countered by logic or documentation. The mechanisms for barrier island migration are erosion of the shoreface, erosion of the offshore (sea level to minus 10 feet to 30 feet), washover of beach sands to the barrier beach and into lagoons, and erosion and littoral transport from the beach-berm to dune and overwash areas. Some sand is lost offshore to deeper water during storms, and some is lost by littoral transport to offshore shoals and other sediment sinks. Some sediment moves with migrating inlets and is deposited in flood and ebb shoals as well as "spit-like" lateral accretion of the updraft end of migrating islands, such as the north side of Oregon Inlet.

Most of the sand loss offshore beyond the summer/winter bar is permanently lost to the barrier system. Some of the sand on the outer edge of the inlet ebb tidal shoal (deeper water area) which is jetted from the ebb shoal at peak ebb tide, is lost to deeper offshore waters. Sediment in the migrating channel remains a part of the landward moving barrier. Sediment in the dune system generally stays within the subaerial barrier complex. Sediment in the washovers, which dominate all transgressive barriers, remains in the barrier complex although frequently in the lagoonal submerged portion of the eroding barrier. Thus, unless new sources of sand are constantly encountered as the barriers move, transgressive barriers will disappear.

Although there are at least three proven origins of coastal transgressive barriers, once formed, the above process applies to all types. This summary of barrier migration is accepted by nearly all coastal geologists and most coastal engineers.

In the memorandum submitted by the Corps on July 8, 1980, it is noted that "the barrier island study indicates that the total land mass of the islands, i.e., the marsh and upland areas combined, is decreasing from both the ocean and the bay sides." This is based on 19th and 20th century maps and in some cases aerial photographs. It was noted that exceptions included "minor new marshes that were apparently created in the vicinity of old inlets, but in general the erosion of the bay-side marsh far exceeded these few additions." The panel seriously questions the accuracy of early (19th century) maps of the lagoon or bay-side marsh shorelines. Regardless, the U.S. Army Corps of Engineers' statement on barrier beach erosion should not be a point of major contention.

The panel is concerned about a major discrepancy between what the barrier island at Oregon inlet is and how it is structured. The barrier island extends seaward underwater to minus 10 to 20 feet; it is typical and normal for washover barriers to extend landward to an undetermined distance. Effectively all of these elements of a barrier plus the ebb and flood tidal deltas must be considered when making a determination of loss or gain in the size of the barrier due to engineering works. Whether or not the Corps of Engineers has considered this or agrees could not be determined from (1) previous data made available; (2) any of the Corps of Engineers' interpretations; or (3) a lengthy discussion of the issue at the meeting in Wilmington. Further, if the interpretation of the effects of the proposed jetty system on the barrier are based on the limited core data available to the panel, then serious questions remain concerning the stability of the proposed jetty system.

Core data indicate 3 to 12 feet of sand underlain by an unknown thickness of soft, possibly Holocene, lagoonal sediment. This material will form the substrate for the foundation of the heavy offshore portion of the jetties. The panel is concerned about the isostatic stability of the jetties.

The extension of the jetties will lead to modification of the ebb delta. Will this delta be larger or smaller than the existing one? It will probably be larger. If so, will the sediment permanently removed from the littoral transport system be of concern in the reduced littoral transport budget? Will the extension seaward of the ebb delta cause a massive permanent loss if sediment (coarse or fine) from the littoral zone drifts? Have studies or models been made of the wave and tital scour effects at the seaward end of the jetty? Has a model study been made of the "new" ebb shoal delta area? Again, the panel suggests that these questions be considered before a decision is made to proceed.

The nature of the present flood tidal delta plays a major role in the stability of Bonner Bridge, an area of known problems, specifically, bridge failure and subsidence. Presumably the recent problem was caused by scour, but may also have involved failure in a mud substrate. The extension of the jetties seaward and confinement of the erosion of the migrating inlet will starve the flood tidal delta of its sand and finer size sediment. The amount of sand jetted lagoonward from the ebb shoal will be much because of the lessened seaward intake. Geological observations and theory dictate that when an activity-depositing process is modified and the sediment supply is altered, erosion occurs. Therefore, a direct effect of the jetties on the flood tidal delta will be erosion and diminuation of its size. This may affect the Oregon Inlet bridge. The panel would like to see the Corps of Engineers' analysis of the effects of geological changes in the flood tidal delta on the long-term stability prospects of the Oregon Inlet bridge.

The issue of a storm bypass of the proposed jetty structure via a new inlet is very real. The present plan calls for a structure to prevent this on its northern side. However, Pea Island to the south is a narrow, very unstable barrier. Erosion rates are high. The probability of major washover when the last man-made dunes are gone (in the near future) is absolute. This will be a simple reversion to past, well documented barrier island morphology and processes as suggested by review of 1940s aerial photography. Any of these washover events and/or reverse flow or blow out from Pamlico Sound through the natural washover channels can lead to a new inlet, possibly beside the stabilized inlet and at any distance to the north or south of the proposed jetty. New inlets will alter sediment transport rates and lessen flow in Oregon Inlet, possibly leading to incipient deposition and isolation. The counter to this was the Corps of Engineers' statement that "no one would let this happen." Have emergency plans for such an event been made by the Corps of Engineers or any other agency?

The longer-term geomorphic changes as a result of the project will be most profound. If the sediment bypass system is 100 percent effective as proposed, the net coastal erosion or transgression landward of the entire beach will still continue at a rate of about 6 to 10 feet per year. The jetties will slowly increase their seaward position versus the barrier. If the bypass system fails, the jetty area will rapidly evolve into a cape-like protrusion as coastal erosion accelerates to the north and south. Of course future engineering projects could be developed to move the jetty system landward with the continuing coastal transgression. However, this must introduce a dramatically different cost-benefit ratio over the long term. These future costs, be they 25 to 50 years from now, are and will be a part of the ultimate cost of this project.

## V. SAND BYPASSING FOR OREGON INLET

It is generally agreed that an effective sand-bypassing system is an essential element in the design of the proposed jetties at Oregon Inlet. After considering the Corps of Engineers' response of July 8, 1980, there are still serious concerns particularly with respect to (1) the timing of the design of the bypass system; (2) the methods proposed; (3) the quantity of material to be bypassed; and (4) the frequency of bypassing.

It was stated during the meeting of August 4-5, 1980 in Wilmington, that the sand bypassing procedure will be described in a "Feature Design Memorandum" following submission of the Phase II General Design Memorandum. Thus there will be no details of the bypass system available until after the jetty design is firm, even though sand bypassing is an essential consideration in the design of the jetties. In the opinion of the panel, the design plans for the sand-bypass system should be

available when the final plans for the overall project are submitted for National Park Service review.

The bypass system as discussed employs a standard suction and pipeline dredge working in the quiet water provided by a movable breakwater. The breakwater system, in turn, is based entirely upon the yet to be developed and perfected "sloping float breakwater" system. This is only one of a number of systems being considered by the Navy, none of which are near full scale prototype production. Indeed, if a suitable portable breakwater is not perfected in time for use at Oregon Inlet, it may be necessary to go through the jetties and do most of the bypassing from inside rather than outside. These considerations should be included in the jetty design.

Both the quantity of material to be bypassed and the frequency of bypassing requires a detailed understanding of the sand budget of the barrier island and Oregon Inlet. In fact, the design of the jetties requires a knowledge of the along-the-coast littoral drift, the amount of material stored in the ebb and flood tidal deltas at present and anticipated after jetty construction, as well as the estimated "natural bypass of sand" associated with the tidal deltas. A detailed listing of annual dredging at the present will aid in estimating the littoral drift.

Although there is an alleged seasonal along-the-coast sand transport of 2 million cubic yards and an upcoast transport of ½ million cubic yards, there has been no documentation of these quantities. These are very large quantities of sand and their quantification is absolutely essential to the design of a bypass system, to the design of the jetties themselves, and to considerations of frequency of bypassing and its effect on near- and far-field erosional/accretional patterns.

The frequency of sand bypassing must be based upon a knowledge, or prediction, of the time-history of shoreline changes as the jetties trap material on one side and waves erode material from the other. Such a time-history can only be obtained from an accurate sediment budget which includes sediment transport times, rates, and paths. The data input and results from such shoreline studies have been requested.

### VI. DREDGING

Although the Corps of Engineers has made a definitive statement against a nonstructural solution (dredging) to the channel improvement problem at Oregon Inlet, the panel believes this question should be further reviewed by the National Park Service. The panel does not question the expertise of the Corps of Engineers in dredging technology; however, there are so many interconnected assumptions and elements in their analysis, that even a modest adjustment within the network of factors can lead to changes in the results. Therefore, since the National Park Service suggested dredging as the only acceptable alternative to the jetties, we suggest careful review of all elements of the Corps of Engineers' analysis to determine if there is any possibility for adjustment and/or compromise. For example, a modest alteration in the design depth for the channel could result in a 10 to 20 percent reduction in the annual cost of dredging. Also, it is possible that a large, long-term project like this might encourage a commercial dredging company to design new dredging equipment.

---

## Effect of the Proposed Oregon Inlet Jetties on Shore Processes and Beach Form Along the Cape Hatteras Barrier Islands, by Douglas L. Inman, Professor of Oceanography and Head Shore Processes Laboratory, Scripps Institution of Oceanography, University of California, La Jolla, Calif.

### BACKGROUND

In their natural state, the North Carolina barrier islands respond dynamically to the shore processes and the intensities of their forcing functions. The principal forcing function for the seaward facing beaches are waves and wave-induced currents that produce seasonally an estimated sand transport of about 1,000,000 cubic yards per year (1 M Yd/Yr) to the south and ½ M Yd/Yr to the north. The gross longshore transport rate of sand is thus 1½ M Yd/Yr while the net transport is ½ M Yd/Yr to the south. This southerly transport of ½ M Yd/Yr is the principal source of sand for Cape Hatteras, Diamond Shoals and the barrier beaches north of Cape Hatteras. There appears to be little or no contribution of sand to this system from the south.

The barrier island morphology also responds to intense waves and storm surges associated with hurricanes and strong winds which produce abnormally high water levels in the ocean and in the barrier protected lagoon of the order of 10 to 15 feet above sea level. High waves associated with storm surges frequently overtop the

narrow barriers, carrying beach and dune sand across the barrier and into the lagoon. Persistent overtopping causes a net landward migration of the entire barrier system. Studies by the U.S. National Park Service over the past 30 years show that the entire barrier island chain from Cape Henry to Cape Hatteras is retreating landward (westerly). The section from Cape Henry to Oregon Inlet is retreating at an average rate of 5 feet/year, ranging from 3 feet/year at Cape Henry to over 35 feet/year at some places north of Oregon Inlet. The barrier from Oregon Inlet south to Cape Hatteras is retreating at an average rate of 7 feet/year. It is of significance to note that the westerly retreat of the east shore of Hatteras Island near Buxton is less than the southerly accretion of the south shore of the island, confirming that the supply of sand for this barrier system comes from the north, and much of this is now naturally bypassed from north to south around Oregon Inlet.

Oregon Inlet was formed by overwash and break-through associated with a hurricane in 1846. Oregon Inlet and the other two, Hatteras and Ocracoke, have been maintained in a natural, open condition by the tidal flow of water in and out of Pamlico Sound. It is known that a given volume of water in a tidal prism (water that participates in a tidal excursion during one tidal cycle) will maintain a constant size cross-section in a tidal inlet or in a series of three inlets, as in this case. The net southerly longshore transport of sand superimposed upon the ebb and flood tidal currents in the inlet channel has produced a net southerly migration rate of Oregon Inlet of 75.2 feet/year during the 133 years of its existence.

The bypass system of sand around a natural inlet follows three paths that diverge at the up-drift portion of the inlet. One path, under the influence of waves and the ebb tidal currents, forms an ebb tide bar offshore of the inlet, and the sand transport follows an arcuate path along the bar and to the down drift side of the inlet where it again becomes part of the normal longshore transport of the beach. A second path follows the flood tidal current into the lagoon where it forms a flood tide delta inside the lagoon. A portion of the sand in this second transport path remains inside the lagoon, while the remainder is transported seaward through the entrance by the ebb tidal current, where it joins the first path and becomes part of the longshore transport. A third path consists of a progressive accretion of sand on the updrift side of the inlet channel accompanied by an equal progressive erosion of the downdrift side of the channel. This latter mechanism provides a net downdrift migration of the entire inlet system.

In summary, the natural dynamic responses to shore processes and their forcing functions of the barrier system from Cape Hatteras north to Cape Henry are: (1) a westerly migration of the barrier chain of about 6 feet/year; (2) a gross longshore transport rate of sand of 1,500,000 Cu. Yd/Yr and a net southerly migration of Oregon Inlet at 75.2 feet/year.

The basic effect of the proposed jetties at Oregon Inlet will be to (1) stabilize the longshore position of the inlet by interrupting the natural sand bypass system of the inlet. (2) The natural system permits sand to flow past the inlet to nourish down coast beaches and also (3) produces a down coast migration of the inlet. (4) The jetties will also act to stabilize the on- offshore position of the inlet in the presence of a general landward (westerly) migration of the barrier islands on both sides of the inlet. (5) The long parallel jetties will also increase the jet effect of the ebb and flood tides, causing the ebb and flood tidal bars to move farther from the inlet.

All five items above constitute significant changes in the natural configuration of the inlet and/or in the natural processes that were formerly active at the inlet. Thus there will certainly be significant short term, intermediate, and long term effects in the "near field" of the jetties, where the near field is defined as extending up and down coast a distance equal to the length of the jetties, i.e. about 1½ miles. The "far field" effect of the jetties (distance of 1½ miles and more from the channel) will be almost entirely dependent upon the quantities of sand moved by artificial bypass techniques, the frequency of bypassing, and the method of placing the bypassed spoil on the down coast beach.

### NEAR FIELD

The near field of the jetties will undergo pronounced change. Because of the barrier effect of the jetties on the longshore transport of sand, the beaches will undergo rapid and cyclic changes in width, depending upon the longshore transport direction, the rate of longshore transport, and the rates and direction of artificial bypass and the method of placement of its spoil. Since there is a reversal in the direction of longshore transport of sand, the beaches on both sides will alternately change in width depending upon the direction of wave attack.

Because of the expected, rapid cut and fill of beaches to either side of the jetties, and because of the mobilization space required for bypass facilities, equipment, and discharge pipe, it is unrealistic to assume that any portion of the near field can be used in a normal way by either the National Park Service or the U.S. Fish and Wildlife Service.

The longshore transport rate of sand is generally proportional to the energy flux of the waves (and therefore proportional to the square of the breaker height). Further, it is not constant but episodic in direction and magnitude. Therefore it is unlikely that any bypass system will have the flexibility or capacity to cope with the highest longshore transport rates which may reach volumes of hundreds of thousands of cubic yards per day during storms. Thus large fluctuations in the position of the shoreline are to be expected. The present plans call for bypassing during the summer months only, and then by a dredge entering the beach behind a floating breakwater, yet to be designed. Thus, for the moment, disregarding all reservations except those concerned with sand bypassing, and in view of the importance of sand bypassing at this inlet, it is totally unacceptable that jetty construction proceed until an acceptable sand bypass system be designed and proven feasible. To be acceptable, the sand bypass system must be deployable during all seasons, and when necessary, it should be capable of functioning daily and bypassing continuously. As a backup sand bypass procedure, elimination of the "doors" along the jetties appears to be an unwise decision.

The shoreline alignment shown by the U.S. Corps of Engineers (Final Environmental Statement, July 1977, Plate 2) appears to be unrealistic, in that the sand fillet is likely to make a more acute angle with the jetties than shown. In the absence of continuous bypassing there will be times when the beach erodes and the barrier becomes much narrower about one jetty length from the channel. Therefore it may be expected that the barrier will be considerably weaker about one jetty length up and down coast from the jetties.

Natural inlets are wide and relatively shallow, so that waters flowing into the lagoon are drawn from a fairly wide shallow surface arc. During the higher water portions of ebb and flood tide, large areas surrounding the inlet are inundated and any floatsom, fine sediments, organic material (including nutrients) will be washed into the lagoon or out to sea. Jettied inlets become a point source and the waters entering the lagoon will come from the water column at the jetty entrance and will have somewhat different physical, chemical and biological properties.

### FAR FIELD

The far field is defined here as those portions of the barrier system that are farther than about 1½ miles from Oregon Inlet. In view of the net southerly longshore transport rate of sand of 500,000 cubic yards/year, it seems unlikely that the jetties will have significant effect on the beaches of the northern far field, unless there is no sand bypassing.

The southern portion of the far field is the one of greatest concern. In the shore term, delay in sand bypassing to the south can result in erosion and weakening of the barrier about 1½ miles south of the jetties. Further, infrequent bypassing will result in alternate erosion and then accretion south of the jetties. This sequence in the presence of the net southerly drift will result in "waves" of erosion followed by accretion that will propagate to the south down the barrier. Such waves may retain their identity for many miles, perhaps as far as Diamond Shoal.

The ultimate long term effect would be for the situation where bypassing in inadequate on a long term basis, in which case the entire barrier south of the jetties will be subject to increased erosion (in this case, a decrease in the total sand budget for the southern barrier system), as opposed to constant sand budget but landward migration and an increased landward migration rate. The increased erosion will be accompanied by increased overtopping during storms and greater frequency of new inlet formation and closure.

### FURTHER MODIFICATION OF THE JETTIES

The present plan shows the north jetty terminating in a depth of about 10 feet of water, while requiring that a project depth of 20 feet be maintained through the entrance channel and bar. Even in the absence of longshore trapping of sand (e.g., continuous and 100 percent effective bypassing) sand will migrate around the north jetty and into the channel. When the fillet of sand trapped behind the north jetty becomes significant, transport around the jetty will become more extensive. Therefore it is anticipated that the U.S. Corps of Engineers will request an extension of the north jetty in order to decrease maintenance dredging costs in the exposed outer

channel. Extending the north jetty will worsen the adverse effects described here for both the near and the far field.

---

MANTEO (SHALLOWBAG) BAY PROJECT, BY DR. ROBERT DOLAN, DEPARTMENT OF ENVIRONMENTAL SCIENCES, UNIVERSITY OF VIRGINIA, CHARLOTTESVILLE, VA.

Assuming the Department of the Interior can resolve the fundamental contradiction between Interior's policy for managing barrier islands by allowing natural processes to dominate, versus permitting an Oregon Inlet jetty project within a national seashore, I offer the following observations and opinions:

(1) The jetties will definitely alter to a significant degree inshore processes in the vicinity of Oregon Inlet. This will be most visible in the patterns of erosion and deposition within the inlet itself and along the shorelines adjacent to the inlet. It is, of course, theoretically possible to eliminate most of this impact by sand bypassing; however, bypassing procedures are, for the most part, straight-forward hydraulic sand transfer (pumping) designed to mitigate at the lowest possible cost alterations of complex physical processes.

If the sand bypassing scheme for Oregon Inlet is a simple north to south periodic transfer, the impact of erosion and/or deposition adjacent to the jetties will be maximized. For example, if .5 million yards of sand per year accretes behind the north jetty, then this will result in the equivalent of .5 million yards of erosion downdrift of the south jetty on Pea Island. I believe this will result in at least a doubling of the present high erosion rate 2-3 miles south of Oregon Inlet for each year the sand is not bypassed. Bypassing can, of course, replace much of the lost sand, but during the period between transfers, the shoreline, beaches, and dune fields will undergo significantly greater flucuation that will increase the probability of dune breaching and storm overwash.

In order to minimize the physical impact of the altered inshore processes, a sand bypassing scheme that approaches the natural day-to-day rates of longshore sand movement is required. For example, if bypassing is scheduled on a two year cycle, then Pea Island will undergo the equivalent of one million yards of erosion in excess of the normal rate during this period. Then, during the planned five month pumping period (April to August) of the third year, it would be necessary to transfer the one million yards across Oregon Inlet to Pea Island at a rate of about 250,000 plus yards per month. This sand would result in rapid beach buildup (a deposit as much as 6′ thick, 250′ wide, and 2-3 miles long) with associated physical and ecological implications. In particular, there will be rapid burial of beach organisms as well as increased turbidity within the inshore zone (out to, say, 3,000′ offshore). If, on the other hand, the bypassing scheme is designed to be essentially continuous (about 40,000 yards per month year round), the short-term erosion/deposition impact will be minimized.

(2) The jetties will also alter some of the basic characteristics of the water masses moving through Oregon Inlet. At present, the shallow waters adjacent to the inlet provide a maximum land/water interface for the potential entrainment and transport of fine sediment and organic detritus. When the jetties are completed, the inlet "intake" will be ½ mile offshore in water about 20′ deep. This will result in reduced opportunity for fine grain inorganic and organic transfer from the ocean to the sound and vice versa.

(3) I'm also concerned about the possibility of storm surge "flanking" of the jetty system. According to the historical record, the areas immediately to the north and south of the project area at Oregon Inlet have been prone to overwash during storms. In fact, aerial phots dated in the early 1940's suggest that both areas frequently overwashed, perhaps even annually. In addition, the 1962 Ash Wednesday storm overwashed through the NPS campground and the Oregon Inlet Marina, and also formed a deep enough overwash channel for water to exchange from sea to sound over two complete tidal cycles. Therefore, of concern is the stated National Park Service and Fish and Wildlife Service policy to more or less allow the barrier islands to the north and south of Oregon Inlet to return to a more natual state. This may lead to a serious management contradiction associated with holding the land areas adjacent to Oregon Inlet in a stable enough condition to serve as the "foundation" for the jetty project.

(4) Based upon our studies during the Cape Hatteras beach nourishment project of 1973-1974, I believe the Fish and Wildlife Service concern about disturbing sea turtles nesting south of Oregon Inlet is justified. To be realistic about sand bypassing, it is highly unlikely that a scheme will be established that does not result in massive periodic slugs of hydraulically pumped sand. And, given the pumping schedule

outlined by the Corps of Engineers, the transfer will take place during the peak turtle nesting season. Therefore, I suggest that the Oregon Inlet project, as designed, will sooner or later eliminate turtle nesting within five miles of Oregon Inlet.

(5) Although this observation can hardly be classed as "expert," I believe the jetty system at Oregon Inlet will result as an entirely different visual impression of the national park, and a major change in visitor use. The large rock jetties are the best example of the "man against nature" approach of coastal stabilization. They will be eyesores for this and future generations. The Oregon Inlet bridge has a certain gracefulness in its smooth curving lines and symmetry. The jetties, however, simply can not be designed to look like anything other than what they are—piles of irregular rock with sharp texture and acute angles. With all of its faults, Oregon Inlet is still one of the most attractive and most used places within the national seashore. The jetties will change this and for the first time since the 1500's, man will stabilize an area that has always been described as the "untamed Outer Banks."

---

OREGON INLET: SOME ECOLOGICAL CONSIDERATIONS BY DR. WILLIAM ODUM, DEPARTMENT OF ENVIRONMENTAL SCIENCES, UNIVERSITY OF VIRGINIA, CHARLOTTESVILLE, VA.

The Oregon Inlet jetties could pose at least two potential problems for the ingress and egress of post-larval and juvenile fishes and invertebrates between the Atlantic Ocean and Pamlico Sound. The first problem involves the ingress of post-larval fishes and invertebrates from offshore. Many species, including the blue crab, Panaeid shrimp, spot, croaker, sea trout, channel bass, and black drum utilize the less turbid, higher salinity water off the beaches for spawning purposes. This means, however, that the recently spawned larval and post-larval forms must find their way back into the estuary as rapidly as possible. This influx occurs through inlets such as Oregon Inlet. Obviously, anything which changes hydrographic conditions around the inlet mouth, such as a jetty, may interfere with this migration. The degree of interference from structures such as jetties is totally unknown.

The second problem involves the offshore movement of juvenile and adult fishes and invertebrates which are leaving the estuary on their way offshore to spawn. Whether the alterations caused by the jetties will affect the mortality rate significantly is also not known. It is possible that the presence of the jetties would funnel the migrating fishes into a restricted plume which would dump them suddenly into deep water; a situation which might be analogized to a cafeteria line for larger, predatory fishes.

---

OVERVIEW OF OREGON INLET, BY R. A. DALRYMPLE, DEPARTMENT OF CIVIL ENGINEERING AND COLLEGE OF MARINE STUDIES, UNIVERSITY OF DELAWARE

1. This statement reflects opinions developed in the course of a brief overview of the proposed stabilization of Oregon Inlet. As such, it is subject to criticism in regards to depth; however, I trust that some of the points made may prove to be useful.

2. The overall project involves the stabilization of the inlet, which is under the jurisdiction of the National Park Service. The purpose of the stabilization of the inlet proper is to provide a deep navigational channel from Pamlico Sound to the ocean, which will be more maintenance and erosion free than the present inlet.

3. The present conditions of the inlet indicate severe erosion on both the north and south beaches within the vicinity of the inlet, with the exception of the spit growing southward through the Bonner Bridge. This erosion is largely due to the present inlet. Tidal inlets are notorious sinks for beach sand; they collect sand by jetting it offshore onto the ebb tidal shoal, or by impounding it in flood tidal shoals within the bay. This has been documented by the Corps for Oregon Inlet. Since 1937, an average of 202,000 cubic yards of material have been impounded annually by the inlet (Design Memo I., 1977).

4. The Corps of Engineers plan has the potential to reduce erosion in the vicinity of the inlet, by reducing its trapping capability. However, it appears that the plan also has the contrary capability of creating additional erosional problems if not properly managed. The essential key to the whole plan is the maintenance bypassing. This bypassing must be at a rate greater than the present natural bypassing at the inlet, in order to affect an improvement of the beaches. The preferred bypassing amount should be the gross littoral drift, with bypassing to the south and north as the seasons change; however, if only the net drift is bypassed, some improvements

to the beaches should result. If the bypassing is not carried out frequently (such as annually or more frequently), significant alterations of the beaches and their environs can result; alterations such as unnaturally steep beaches of a significantly greater width.

5. Short term impacts of the jetties will result as soon as construction commences. Besides the obvious onshore changes, the jetty construction can create large scale modifications of the offshore and nearshore bathymetry, not all of which are detrimental. As recognized by the Corps, the formation of fillets (and, hence trapping of sand) will begin as soon as the jetties enter the water. If bypassing is not begun as soon as large enough quantity (relative to the net annual littoral drift) of material is impounded, short term erosion can occur. This certainly could happen in the first year of construction. An additional feature of jetty construction is the modification of the offshore bar. At Ponce De Leon Inlet on the east coast of Florida, the construction of the south jetty apparently caused the offshore bar to migrate shoreward. This migration was due to the inlet channel modification which removed the stabilizing effect of ebb tidal flows from a large portion of the bar, and thus wave action was able to move bar material shoreward at a rate equal to the impounding capacity of the south jetty. This resulted in the beach accreting at a rate equal to that of the jetty construction seaward. This phenomenon would free vast quantities of sand presently trapped on the ebb tidal shoal, making it a one-time sand source for the beaches. Another one-time sand source will be the volume of material dredged during the construction of the deeper navigational channels. All sandy materials should be placed on Pea Island to provide a reservoir until bypassing commences.

After the inlet is completed, the erosive effect of the inlet will depend on the amount of sand impounded by the jetties and any ebb or flood tidal shoals that might develop. These shoals should be small, if maintenance bypassing is done regularly; however, if it is not, they must be dredged and the material placed on the beaches. An additional erosion area impacted in the short term will be the bay bottom. A straightened, jettied channel will result in a change in the natural channels in the bay, with certainly a reorientation, and probably a deepening and lengthening of these channels. This may have a biological impact, if the present channels and associated shoals have biological importance.

6. Long term changes due to the inlet stabilization depend principally on the maintenance dredging schedule. If done frequently or continuously then the inlet modification in the long run would be beneficial, as the trapping of the present inlet would be stopped. The frequent bypassing of sand would result in smaller areas of feeder beaches impacted by spoiling and could closely approximate natural sediment transport processes which also result in significant changes in beach planform and profile. On the other hand, an aperiodic dredging schedule, which allows large impoundments at the jetties, would be extremely detrimental. The area most likely to be severely affected by this course of action would be a region of Pea Island which is now undergoing severe erosion. The present erosion rate would be accelerated by the presence of the jetties. A corresponoding but smaller acceleration of erosion rate would occur to the north. These two erosion problems would be caused by the fact that the inlet would trap material which would normally be transported into these areas to replace material moved away by natural littoral processes.

A long term on-going natural process is the landward retreat of the barrier island system due to sea level rise. If this retreat is on the order of 6 feet of shoreline recession per year, we could expect a retreat of 300 feet during the 50 years life of the project. This should have no real effect in the jetty or its functioning as the island is quite wide at the site of the inlet. In fact, several hundred years would be necessary for the shoreline to retreat to the planned north shore anchoring section.

7. The key to the whole project, as mentioned before, is the sand bypassing plan. If sand is bypassed around the inlet in a continuous manner, somewhat replicating nature, than the impact of the inlet should be beneficial. The more the sand bypassing procedure deviates from continuous bypassing the greater the adverse impacts. If, for example, no sand is bypassed mechanically, it is expected that a rapid shoreline retreat would ensue on Pea Island, similar to that at Ocean City Inlet, Maryland. At Oregon Inlet, within several decades, the south jetty would be flanked, necessitating further jetty construction or beach erosion control measures on Pea Island.

From an erosion standpoint, bypassing should be done continuously or, at the least, annually This requirement would necessitate a reliable bypassing scheme. It would ideally be an "all-weather" operation, in the sense that it could operate under most conditions. It appears that the new proposed scheme for bypassing, involving an offshore floating breakwater and a floating dredge, does not meet this

requirement. The state of the art in floating breakwaters is not so refined as to allow the design of a breakwater of reasonable size and cost which would be effective in protecting the dredge from anticipated waves. Floating breakwaters are most effective in stopping waves of the same or shorter lengths as the width of the breakwater, which as the Corps mentions, would require a large structure, with its attendant mobilization and anchoring costs. It seems that this aspect of the project is the weakest in terms of design, yet it is of utmost importance to its success. Further it appears that the removal of the jetty gates from the project has severely weakened the overall ability to bypass material. The previous maintenance plans enabled a dredge to excavate from the jetty channel out to and through the impoundment fillet, excavating a vast quantity of material without exposing the dredge to the ocean environment. This capability is now eliminated from the plan, which leaves the bypassing scheme dependent on the performance of the as-yet-to-be-designed floating breakwater.

8. Two concerns not mentioned above refer to the jetty orientation and effect on the nearshore currents. It appears that the inlet orientation is being dictated by the present channel alignment. This directs the tidal flows in a direction opposed to the littoral drift. In a hypothetical situation where natural sand bypassing occurs, it is better to orient the jetties in the downdrift direction, thus improving bypassing. Orienting the jetties in the updrift direction in this case, would reduce the bypassing capabilities of the inlet, as material would be backpassed and not bypassed during a tital exchange. For Oregon Inlet, where the bypassing is ostensibly to be wholly mechanical, it appears that there is no real reason for the proposed jetty orientation. It seems that some cost saving could accure by directing the jetties perpendicular to the shore, thus reaching the design offshore water depth with shorter jetties. Of more minor concer is the local alterations of the nearshore current systems. The presence of jetties can cause seaward flowing rip currents near them and an attendant circulation cell, which would be dangerous to swimmers, particularly where augmented by a flood tidal current. It appears that there will be a hazard to swimmers; however, it is not clear if it will be greater than presently exists.

---

DR. JOHN C. KRAFT, PROFESSOR AND CHAIRMAN, DEPARTMENT OF GEOLOGY, UNIVERSITY OF DELAWARE, AUGUST 1979

The lagoon-barrier system at Bodie-Pea Island, North Carolina consists of a late Holocene (past 3000 years) linear sandy barrier island migrating landward and upward as pervasive coastal erosion continues. The narrow low lying barriers vary from 0.3 to 1.8 miles wide in the vicinity of Oregon Inlet. A few dunes have elevations of over 100' feet above sea level, but these are the exception. Many of the narrow dunes that parallel the coast next to the beachberm are artifically derived from a beach protection program over the past 40 years. Present U.S. National Park Service policy is to allow the barrier islands to revert to their natural setting of the past. Further, the regional coastal setting is one of 11 (plus or minus) inlets historically recorded, with only 3 now open (several possible new inlets over the years were closed by man shortly after their breakthrough). With reversion to natural state (acknowledging that parks, roads, and villages exist), it is probable that large numbers of storm overwash features will occur and indeed become normal in the coming decades. Thus, occupancy patterns of the barrier systems will be drastically altered.

The barriers are migrating landward by overwash processes, wind blown features, and inlet migration. This means that the sandy barriers presently overlie the muds of the eastern area of Pamlico Sound of the recent past. An average recent rate of coastal recession (erosion) for the Oregon Inlet area is approximately five feet per year. This rate varies from the extremes of thirty feet per year within four miles north and 15 miles south of Oregon Inlet. Within this coastal reach minor adjustments of the shoreline by accretion have occurred. The long term (decade and greater) future of the coastal barrier system is and will be that of landward transgression. The process is inevitable and probably not questioned by anyone. The causes are long term gradual and shorter term fluctuating relative rise of sea level to that of the land. The dominant driving mechanism is storm wave erosion, littoral transport and barrier overwash.

As the barrier migrates landward some sand is lost to the continental shelf. However, much of the sand is continually recycled. Sediment which is overwashed or advances landward via flood tidal deltas guarantees the continuity of the barrier. Over the past several thousand years, enough "new sand" has been encountered by landward erosion and added to the barrier to make up for the sand lost to the off-

shore continental shelf. If these processes were not so, the barrier would begin to disappear. To date man's major interference with natural processes along the coast in question, is that of causing dune aggradation. This procedure has now been halted, probably because of the recognition that storm flooded damage along the periphery of Pamlico Sound will be drastically increased by the "ponding effect" of storm flood waters during major northeasters and hurricanes.

The proposal to stabilize Oregon Inlet with a jetty system will lead to major alterations in the immediate vicinity of the inlet and will cause longer term regional effects. Some aspects to be considered, should the project proceed, are summarized in the following paragraphs.

The "jetty effect" of protruding a manmade structure about ½ mile into the sea will lead to some accretion alongside one or both of the jetties (probably only on one side). Wave refraction around the jetties will set up a condition of increased erosion on both sides, north and south away from the inlet, dependent upon the dominant wave approaches. The intensity of wave activity will vary seasonally and erosion loci will be dependent upon storm frequency and wave approach direction. Past history suggests that greatest accretion will occur on the northerly side over the longer term, with the possibility of a short term rapid accretion along the southerly flank during and after construction. The areas one to three miles north and south of the jetties will probably immediately undergo an accelerated rate of erosion. Gradually a new "stability form" will establish and the increased rate of annual erosion will migrate north and south along the beaches. It is anticipated that the greatest (possibly the only) increased erosion will be to the south. However, it is possible that the highly varied storm wave spectrum of this coast will set up a cycle of increased rates of erosion both to the north and south of the proposed project. Ultimately, the erosion effects will occur as far south as the Hatteras Cape.

The proposed project calls for a "permanent" sediment by-pass system (in both directions) to counter the above inevitable acceleration of coastal erosion rates. If such a by-pass system is continued in a daily or weekly sense, year in and year out, it might truly be possible to negate the "jetty effects" and cause no change in present rate of landward migration of the barrier islands. However, if the sedimentary by-pass system is intended to be seasonal in operation (summer), then the sediment by-pass system will not work over the longer term. The greatest erosion rates are seasonal in the sense that they are storm caused. This means that the by-pass operation must be in continual operation throughout the fall-winter storm season. To argue otherwise or suggest dredge by-pass only yearly or over several year periods will only lead to the obvious projected acceleration of coastal erosion rates.

A secondary effect of the jetties will be to offset the ebb tidal delta or shoal areas seaward. This means that more of the barrier sands will be permanently lost from the littoral transport system into offshore deeper waters. A problem maintaining the channel will occur, particularly in the winter as the channel will tend to open and close by bar development in the more exposed seaward position.

If the jetties are effective, they will decrease the quantity of sand size sediment flowing through the channel to the flood tidal delta in Pamlico Sound. This will deprive the landward sides of the barrier and Pamlico Sound of one of the major sources of sediment to build up the barrier in its steady landward advance. Unless sediment is supplied to the landward side of the barrier by flood-tidal delta or by storm overwash, the barrier island will be subject to both ocean front coastal erosion and bay shore instability or erosion and the barrier islands will become increasingly narrower in future decades. Thus, the barriers will become more and more subject to breakthrough of new inlets. Inlet formation should be considered a normal process. As noted before, approximately 11 inlets have been historically recorded along the Outer Banks. One inlet of import is that opposite Roanoke Island, through which the first settlers entered Pamlico Sound. Another is a possible ancestral inlet to Oregon Inlet in its present area.

The possibilities of new inlet breakthrough will increase because of the construction effect of the proposed jetties. The areas of most likely new inlets can be identified at many points along the barrier. Several of note include the areas immediately north and south of the jetty and along the southern end of Pea Island. It has been pointed out that new inlets are not a problem. I agree; however, by closing off new inlets, as in the past or in the future, a potentially very serious problem develops. Storm surge and overwash waters will pile up in Pamlico Sound. With westerly-northwesterly winds, resultant storm floods can create catastrophic flooding of the bay side of the barrier and its towns. Further, the process of restricting and closing inlets merely increases the chances of blow outs of new channels. As this could be at random, potential exists for greater economic loss—both by flooding and by erosion of man's structures (houses, bridges, etc.). In summary, more inlets or wide lesser

numbers of inlets are desirable. The Oregon Inlet plan calls for greater restriction of inlet width which can lead to catastrophic consequences. It should be remembered that Pamlico Sound is a very large lagoon. Storm water "pile up" under one set of wind—wave conditions can rapidly move to high water in another area as a storm passes. Thus, inlet restriction is not desirable.

The barrier is transgressing over the muds of Pamlico Sound. This may create severe structural problems at the jetties themselves. Limited bore hole data available to us from the proposed jetty locations show that the oceanward one-half mile of the jetties will rest on a sand layer average 3-7 feet thick with a maximum thickness of 12 feet. This layer overlies muds of ancient Pamlico Sound. These silts and clayey silts will probably compact under the weight of the jetties. Presumably engineering studies have allowed for this soft underlying substance. However, data available to us show test borings to only twenty (20) feet below sea bottom. There may be a much thicker layer of mud under the seaward jetty system. My opinion is that the great weight of the jetty structures will cause subsidence. This should be accounted for.

Environmental problems will occur in three major areas. These include (1) the inlet itself in terms of recreation, esthetics, and destruction of the natural environment of plants and animals; (2) Pamlico Sound in terms of greatly increased turbidity during construction (temporary), possible tidal variation from present, and probable destruction of the present flood tidal delta environment in total if the sediment by-pass system succeeds and cuts off new sediment supply (all of these microenvironments and their import should be identified by Fish and Wildlife experts); and (3) the areas of sediment by-pass deposition, i.e. the beach face-berm. If by-pass deposition is once yearly in large volume (1,500,000 cu. yds. ±) then any organisms dependent on the beach-berm shoreface environment will be totally destroyed (in the impact area). If the by-pass system is continuous, then a new sediment sorting process will be evident on the one to three mile impacted beach area. If this is important in terms of organisms in normal life position or in larval or egg state, then these items should be identified and evaluated by Fish and Wildlife personnel. In summary, the present inlet environment will be destroyed and a new, greatly different environment will form, the flood tidal delta may be destroyed or altered, turbidity of sound waters near the inlet will change (life of construction project) the animal-sediment relationships or the dredge by-pass dump area will be altered or destroyed, and the people usage of the inlet recreational facility will dramatically change.

The longer term geomorphic changes as a result of the project will be most profound. If the sediment by-pass system is 100 percent effective as proposed, the jetties will slowly increase in their seaward position versus the barrier. If the by-pass system fails the jetty area will rapidly evolve as a cape-like protrusion as coastal erosion north and south accelerates. Regardless, as the present net coastal erosion will continue, the long term (several generations) morphology will probably be a major promontory or island formed around the jetties. It is of course possible that the jetties will be moved landward in future decades by future coastal engineering plans to accommodate the inevitable landward barrier migration. Calculations should be made at this time regarding longer term maintenance plans for the jetty system over the life of the engineered project. These are an integral part of the cost just as much as the annual sand by-pass costs. In addition, I recommend that costs of highway movement and maintenance as related to possible accelerated erosion be studied and made known. As the possibility of failure of the proposed system exists, the potential resultant costs should be evaluated.

Mr. LIENESCH. That might lead you to the answers of some of these questions that you're raising.

Some of these individuals, Dr. Inman, Dr. Dolan, Dr. Riggs, and others have done work in this area, have looked at this project, and we would be happy to furnish you with that information, because we believe it will help you to understand where our position comes from, and to answer the kind of questions that you are asking.

If I could just briefly go through a couple of the environmental issues, and again, I won't be answering your question. In a sense I'll be adding to your questions, but I think they are legitimate questions, and the kind of effects that we need to look at.

The question of erosion. It seems in listening to the debate today, there's a question of whether or not the system as proposed will work. Because it is in part an experimental system in that the floating breakwaters have not been used in an ocean environment—at least not one like this, as I understand it—no one will be able to answer definitively whether these will work.

Some of the scientists I've mentioned have looked at some of the previous designs as released by the corps, and have had serious concerns about whether they will work, and whether or not the erosion will actually increase. They believe it will especially to the south, beyond the 3 to 5 miles that are in the immediate project area.

There is a question and this was raised this morning about the timing of the nourishment. Apparently depending on when the beach is nourished, during winter storms, during the summer and so forth, it affects the dynamics of the beach and the amount of erosion.

And the problem, of course, is that you cannot nourish the beach during the major storm events that would require the system to either slow down or to have to come and diminish its work because of the storm event.

There is a question that, of course, is in a sense beyond the confines of this subcommittee and committee, but one that we're concerned about, and that is assuming that the breakwater is working, and the whole sand bypassing system is working, that we will have appropriations in the future to make sure that that system is funded and can continue:

And, of course, one concern that we have, and again, it's beyond probably your concerns, but it's certainly one of ours, that even assuming that this worked, and we doubt it would, are we sure that money will be there? Will the budget have enough money in it in the years ahead to make sure that the sand bypassing system is funded, and therefore, that the erosion would not occur?

There has also been a great deal of discussion today about how dynamic this inlet is. And no questions have been raised about what would happen if the jetties are built at, say, 2,500 or 3,000 feet and you have a major hurricane. What does that do to the jetty? What does that do to the development behind the jetty in the sound? Would that have any effect of creating a new inlet some place else because the jetty cannot expand, or the inlet cannot expand with the jetty there like it would if the jetties weren't there if you had a major hurricane and the water was rushing back out to the ocean?

Those are some of the kinds of questions that I think are important to look into, and ones that we're deeply concerned about, and ones that I have read about, that these scientists have addressed, and which I think are very important for the record of this hearing, and give some of the other side of the concerns about the erosion and the probable effects of this proposed project on both the wildlife refuge and the national park.

Others today will be looking into the economics of the project and have much greater expertise and knowledge than I do, so I'll not go into that beyond what you've heard from previous witnesses, including Mr. Osann.

That concludes my statement, Mr. Chairman.

Mr. ROE. You statement will be included in the record.

In 1962 or 1961 we had a terrible hurricane on the east coast that ravaged my State. Don't forget, New Jersey has enormous coast lines. In New Jersey, the largest single industry in the State—and we're the medicine capital, the pharmaceutical capital of the world—the largest single income in the State of New Jersey is the shore tourist resort industry, believe it or not.

Mr. LIENESCH. I believe it, sir.

Mr. ROE. Now, having said that, going back to 1961 and 1962, I was the commissioner of the department of conservation and economic development for the State for 7 years before I came to Congress. We had a devastating hurricane. The damage it did was enormous, to the tune of hundreds of millions of dollars.

We put up a lot of the money, but thank God for the Federal Government. Without it we would never have survived. The changes that that hurricane made along that coast are permanent today, until we get another hurricane. All I'm trying to get across is as far as a hurricane effect, you know, so the world may come to an end, somebody might shoot off a missile tomorrow, too.

But the question is the problem is still there. Now, let me ask you the same question I asked Mr. Osann. What would be your recommendation for a solution? The purpose of this hearing is to see if we can solve the problem.

Mr. LIENESCH. My recommendation is the same as his. We do not believe that the hopper dredging which was tried in a massive form this year for the first time in several years, that one season's trial, which isn't even over in the sense because we're still in the middle of the winter season, that one season's trial would be sufficient either way. Whether it proves our point or their point.

Mr. ROE. Didn't the corps testify to the point of view, as I understood them, that no matter what they did that the dredging was not the answer?

Mr. LIENESCH. All I can say is that some of the scientists, whom I've listened to their testimony, read their work, have the same suggestion, that we try this to see if it will work.

Mr. ROE. In the absence of an answer or a solution to a problem, maybe there's some experiments we have to try. There are certain things the corps know will work. But there's a certain amount of experiment involved.

Maybe what we should be doing is making this an environmental research program. This is not a new problem to us. It is going to come up again. And maybe we should be taking a look at it that

way. Maybe we should make an investment to test that out, to see whether it's going to work or not. If it doesn't work, we'll do something else.

We had a battle in the Clean Water Act last year. There was an issue that had arisen; maybe you remember it. It had to do with a paper plant out on the west coast, in California. Do you recall the issue?

Mr. LIENESCH. No, sir, I don't.

Mr. ROE. And the situation had arisen that everybody and their brother was opposed, environmentally, to that program until they really go into it.

Then when they got into it, the question was whether the outflow should go to the ocean. And the answer was no, no all along the line.

But when the environmentalist organizations really studied it and got into the facts of it, it wasn't emotional, they got into it. They came back and importuned this committee to change our position at that point, and that the best environmental solution was to dump that effluent into the Pacific Ocean because of the depth of the water and it could assimilate and so forth.

Now, do we have the right because we don't think we have the answer, or we disagree with somebody else's solution, unless we're willing to present another solution? And do we have the right to say well, we'll drag a little bit more.

It's been 10 years. We know what's happening. Or should we say in view of the peculiarities, and this is a special case, that's why we're having a hearing, maybe what we should do is go into an environmental experimental program and try this out.

Would you have an objection to that sort of thing?

Mr. LIENESCH. I would make two comments to that, Mr. Chairman. First, the dredging this year is with a deeper channel. The hopper dredge has dredged a deeper channel than previously.

So therefore I cannot accept the assumption that we tried this for 10 or 20 years and it hasn't worked. We've tried it for one season.

Mr. ROE. OK.

Mr. LIENESCH. Now, I have been told that that was tried back in the 1960's. What I'm saying is try it now; get it deeper, as they've done this year. They've dredged a new channel; depths of 20 plus feet in some areas.

That's one point I would make, so we have something different than the last 10 years.

Second, I would say if we're going to experiment, why don't we experiment with something that admittedly we're saying costs $4.5 million a year and try that for a couple of years and then, rather than trying something that costs $98 million.

Mr. ROE. The corps has said that that doesn't work. Didn't the corps testify to that? Didn't you testify that the dredging does not work? Are they here?

## MR. VALLIANOS—RESUMED

Mr. VALLIANOS. Mr. Chairman, the corps' position is that in a long term program of providing assured navigation through Oregon

Inlet, that it cannot be obtained by a dredging program. Year to year it cannot be predicted whether the channel will exist or not.

And if we're talking about experimentation, what in fact we're experimenting with, if we have any belief in the fisheries industry, or desire for that in North Carolina, is what we're experimenting with are people's livelihood and the whole cultural background.

We can dredge in there, we can obtain depths. And as the gentleman stated this year those depths are deeper. He doesn't state why they're deeper. They are deeper because that dredge plant could not dredge a wide enough channel.

The attempts were made to undercut the side banks which would not fall to the dredge. That was only partially successful. As a result of the undercutting, deeper depths, trying to make the sides cave in so the channel could be broadened, since that was only partially successful through the overdredging used by the Hopper Dredge *Mermentau*, we had to bring in the Government's side cast dredgers along side the shallow banks to, in effect, pump the sand into deeper water where the hopper dredge could take it out of the channel.

Hence, the deeper depths. In spite of that, what is occurring now is that, and may I just quickly point this out to the committee? This is the record of dredging in terms of depths obtained in the period 1960 to the end of 1983, December of last year.

What this shows is depths above 14 feet; that is, depths above that nominal channel depth of 14 feet, and the lower spike showed depths at or greater than 14 feet.

And to take a quick look at this history, we see immediately that the overall history is very bad. More times than not depths were considerably above 14 feet and unacceptable for today's navigation.

However, even in this record, sir, there are 3 years. Let us begin, right now, in 1983, of what will prevail in the rest of 1984.

The statistics show that even under these conditions there were in fact 3 years in which depths were at or greater than 14 feet. One, in 1965 when the Hopper Dredge *Hyde* was working in the area. However, the next year is a horror story. It was filled immediately up, in spite of a solid year of depths in excess of 14 feet.

Mr. STANGELAND. How far below 14 did you go in 1965?

Mr. VALLIANOS. That depth was, on an average, 17 feet. Then, surprisingly, we have 2 consecutive years of depths greater than 14 feet, and they are in the period of 1978 and 1979 in which only side cast dredges were used.

Now, the interesting part of that story is the next 3 years were a nightmare for fishermen and for the Corps of Engineers at Oregon Inlet.

We couldn't maintain anything in there. Now, in our past dredging effort, and may I say again and emphasize, we are a dredging organization. So, lest anyone think we try to denigrate the process, let me dispell that notion. We get a heck of a lot of money each year to do dredging.

All right, the interesting part of this story of last year, which the layman who attempts to take a picture of a dredging condition and translate that to a technical fact has a lot of difficulty, as I might if a radiologist gave me an X-ray to look at and give diagnosis.

But, we have a period, and it's interesting that someone mentioned—I think it was Mr. Potter from the Department of the Interior—that in spite of a storm in the latter part of September 1983, we accomplished extremely good dredging results.

We began dredging with the Hopper Dredge Mermantore, and side cast dredges, two of them of the Corps of Engineers, on the 2d of September 1983. And for the first 2 weeks, till the 19th of September, we got extremely good results.

We excavated a total of 219,000 cubic yards of sand. However, from that period, from September 19, until November 17, we didn't accomplish anything.

This straight line, this horizontal line, shows the net dredging production was nothing. At that point the fishermen, rightly so, were very, very concerned. They said the dredging effort was a disaster at Oregon Inlet. Those were the words we received in some letters.

So we catch it from both sides, may I say. However, on the 17th of November through the 10th of December, the whole thing was saved. We began to shine. The channel was undercut, underdredged and expanded.

Now, what is interesting about this is that in the first period in which we got good production, from the 2d of September to the 19th of September, the wave energy levels coming into Oregon Inlet were only 55 percent in terms of energy concentration; 55 percent of what one could expect of the wave energy at Oregon Inlet on a normal basis.

And we have a very long period of wave records for the Oregon Inlet, Cape Hatteras, Outer Banks area.

In this period, the dredge, because of seas, was unable to work, and as a matter of fact had major repairs due to damage in storm conditions in October.

It came back from the shipyard, and began dredging on November 17 and did great through December 10. So, we've got two little time periods here, half of November, and the first half of December. What were the energy conditions then?

In this time period B the wave energies incoming to Oregon Inlet were only 15 percent of the normal you could expect for that time of the year. In the December, they were only 29 percent.

The point is this: The environment here is extremely hostile. It's a variable climate, but there are periods in which we do have favorable conditions. There you can evidence that by pointing out in the past history, in 1965 we had a whole year with depths greater than 14. In 1978 and 1979 we had 2 years, consecutively running, great navigation conditions.

The final years were horrible. In this period, and I suspect through January—we have not synthesized the wave data yet, so I don't know what the conditions for wave energy are for the January period, but I suspect if you talk to fishermen that they're pretty low.

It is nothing to say that we may have a providential situation through 1984. Might even have it in 1985. But one thing that no one, no matter how they don't like this project philosophically or otherwise, can they ignore 22 years of history?

It is there. There isn't one scientist, one engineer that will promise you that dredging can effect assured navigation through Oregon Inlet consonant with the type of expanded commercial fisheries industry to which the State of North Carolina looks.

Now, those are not only professional opinions and views, but they are based on studies. Whatever opposition, whatever reports or papers, there is not one study, scientific study involving computations, looking at the wave energy, or anything that can begin, or even exists to refute the studies we have produced.

You can get opinions from anybody. Professionals and laymen are willing to give you opinions, but what I would like to see are some studies involving scientific and engineering background, which we don't have.

Mr. STANGELAND. Mr. Vallianos, is there any difference in the ocean velocity or wave energy created by the difference between a 14-foot depth or a 20-foot depth? Or does that have no bearing on the turbulence of the water?

Mr. VALLIANOS. Yes, sir, it does have. And may I say that as we dug deeper through this expanded dredging effort in an attempt to make the sides of this channel cave in to the dredge where it could get it—see, this dredge is literally dragging two pipes with drag heads on the bottom to suck up the material.

And it cannot in a wave environment, it cannot get too close to these very steep banks that are about on slopes of 1 to 5 one horizontal to five vertical.

It cannot get too close because it fears being jammed up against that slope, and having one of those drag irons come up, and puncture a hole and sink the vessel.

We had that happen in Oregon Inlet with one of our side casters. The master had to drive it against a shoal to keep the vessel from foundering. It stayed aground 2 weeks, and in that period it was pounded so badly that the deck plates were permanently wrinkled.

But there is a very dangerous point at which the dredge master, whoever he is, is not going to take his vessel against that bank.

So after we undercut and dug this thing deeper, and were still not able to really make those banks cave down to the dredge, we have also noted extensive shoaling in the western side of the channel, the interior. Not the ocean portion, where as the dredge was agitating, not only sucking up material, but agitating these particles of sediment up, they're carried very quickly by the current.

And what has happened to those, and I think all the fishermen here will attest to that, because we're having really a problem with it, is extensive shoaling all of a sudden occurring in this western channel leading back to the point where vessels make the turn to go to Wanchese. But more in the immediate inlet environment, we have had very high shoaling in this zone, which unfortunately has blocked off the Coast Guard station. As a result of that, the Coast Guard vessels now much more, because they can't get out of here to respond to rescue calls, they have moored over here in this marina which involves quite a travel distance to a point back here in the estuary before they can come out of the inlet again.

So there have been some drawbacks to the deepening and scouring effect which we have purposely done here in order to try and

get this channel deep enough and wide enough for these fishermen to survive through this winter.

And hopefully, the weather conditions will continue to be in this really quite unusual calm situation. If so, maybe we won't spend $4½ million. On the other hand, we may end up spending $5 or $6 million.

The history, anyone taking depths in here, if you're going to bet on it, you better bet that it's going to fill up. That's where you're going to make your money.

Mr. ROE. While you're there, if the witness doesn't mind, let me ask two questions. One is that, what is the volume of recreational boating through there?

Mr. VALLIANOS. It's quite large.

Mr. ROE. Do we have the statistics? We don't have them? OK. What I'm getting at is let me ask you this question: While you have dredging equipment in there working, it seems to me at the same time you're also going to have commercial traffic in there, and you're going to have recreational boating in there at the same time.

So that the interrelationship of the dredging operation as you've explained it, together with the commercial fisheries, together with the recreational boating, I imagine might create a bit of a problem at times.

Mr. VALLIANOS. You mean trafficwise?

Mr. ROE. Yes.

Mr. VALLIANOS. I don't think there's been experienced yet a traffic problem in there. Now, I must say that there is a distinctive traffic problem now because of the lack of a 400-foot channel. In fact, the Coast Guard has only spaced the buoys in Oregon Inlet after this last dredging about a nominal 250 feet apart. Some of the actual buoys are only about 230 feet apart.

But the buoys are on chains and they swing quite large distance. So nominally we can say the Coast Guard, even looking at the last dredging effort because of some shoals protruding in from the seaward end, 3,000 feet out, over a half mile of the most dangerous part of the channel, in that zone they have spaced the jetties about 250 feet apart. And on the inward part of that same ocean channel, they have again spaced those buoys about 250 feet apart, but unfortunately one is on top of a shoal that's already built in that channel.

So in that case I don't believe that any of the experienced mariners of that area would attempt passing vessels, either overtaking and passing or passing in two way traffic situation through Oregon Inlet.

Because you must understand that the times when they're really going to have trouble is when seas are running. And not only is the vessel experiencing uncontrolled, large uncontrolled vertical excursions, which the pilot has no control over, but also there are uncontrolled horizontal excursions which he has no control over.

A large trawler, the *Darana R* ran aground because that vessel, had it been in a wide channel would not have gone aground, but because of the narrowness of that channel—that was not this year, but last year—he came in and a wave came in on his stern, and in effect the vessel was surfing with the wave.

At that point the helmsman has no control because the rudder is has no relative water motion by it. The vessel and the water are all moving at the same speed. As a result, he went off to the side, it was a narrow channel, and he immediately went aground.

There were, I believe, 45 hours of effort of 20 or more vessels that got him eventually free. He almost lost that vessel, another half a million to million dollar investment.

So, the narrowness—not only is it the question of rapid filling of these channels, but it's also that they fill in laterally and reduce the width and the pilot has, in a heavy sea, he simply doesn't have enough margin of safety as the waves push him one side to the other before he can gain control with the rudder and get a steerage that carries him through a safe course.

Mr. ROE. What you're developing is in spite of the energies and efforts and the dredging situation, and you explained that situation quite clearly. The situation is a dangerous situation from a navigational point of view.

Mr. VALLIANOS. There's no question, Mr. Chairman. I have seen the letter submitted to fishermen up there from an insurance agent which in effect says if there's another wreck, I think some of the locals can testify to this, that if there is another wreck there's going to be an awful lot of difficulty having your vessels insured.

Mr. ROE. What I'm trying to get into the record, from your point of view, your expertise, and your obviously in depth knowledge of the system, this present situation, the dredging and so forth, is a dangerous situation to the boating public. Is that a fair comment?

Mr. VALLIANOS. Yes, sir. It's not the dredging that is dangerous.

Mr. ROE. What I'm trying to get at, if you can't dredge this hole in 5 minutes, you've got an ongoing dredging program and so forth. The dredger fills in—your 22-year record indicated that.

So we're coming back and saying there's no given, there's no known there because that can change depending on what the weather conditions are and whether we have a higher flowing sea and so forth and so on.

So it's a constant burial, is that a fair statement?

Mr. VALLIANOS. Absolutely.

Mr. ROE. Therefore, this creates a dangerous situation to begin with. That's what I wanted.

The gentleman from Minnesota?

Mr. STANGELAND. I have no further questions.

Mr. ROE. Well, let me thank our witness for testifying. You can see part of the things we're wresting with. And I think the testimony has been good.

There's one other point I think we ought to get into the record, however. In your opening statement, in the third paragraph, you make the comment, and I quote, the enabling act states the area shall be permanently reserved as a primitive wilderness and no development for the convenience of visitors shall be undertaken which would be incompatible with the preservation of the unique flora and fauna, or the physiographic conditions now prevailing. The proposed project is clearly at odds with the spirit of this mandate.

Would you take those maps down and leave the big map? Now, the question I'd like to ask the secretary from North Carolina,

we've got that, you have Route 12 going through there. We have Route 12 which is a highly traveled route going through there.

We have a bridge that crosses there. Now, we're coming back—and I'm likening this to Long Beach Island in my own State. It's very similar.

Now, we come back and we say what is the width of Pea Island and Bodie Island. You've got a highway coming down the middle, and I'm looking at the traffic map here. And we're talking about pristine flora and fauna and enabling primitive wilderness and no development, but you have a highway going right through the whole thing. We have other projects that are built in there. We have a Coast Guard station. Does anybody know the width of the——

Mr. SUMMERS. Half to three-quarters of a mile.

Mr. ROE. So, how big is Route 12? Two lanes?

Mr. SUMMERS. Two lanes.

Mr. ROE. So here we have a two-lane road transgressing this whole area, and that kind of defies the area of the ultimate pristine wilderness; does it not?

Mr. SUMMERS. Without about 2 million visitors a year.

Mr. ROE. OK. That's a fact. That's a matter of record. That's where I'm going.

Mr. LIENESCH. If I could just add on that point, and the gentleman from North Carolina can verify this or expand on it—it's my understanding that the road is owned by the State. What I'm getting at is the right of way is the State's, not the Park Service's.

Mr. ROE. I'm not quarreling with that. But it's there. So the question—we've set aside many areas of New Jersey, and we have a tough problem because we're the most urban developed State in the Nation. If we set aside five acres here we consider that a great achievement, even though there may be big buildings around it. But that's our 5 acres.

What I'm trying to get at, because this gets to the floor, and people come back and say this is a primitive wilderness here, barrier reef islands, magnificent treasure of the United States, but we've got to let the people know that you know it's a half mile wide. There's Route 12 going down the middle of it, and I think that's a fair comment to make, is it not?

Mr. LIENESCH. Yes, sir.

Mr. ROE. That's all I wanted to get in the record.

Mr. LIENESCH. I've been on that road. I've driven it. It's still very much, when you get off the road, very much wilderness area.

Mr. ROE. I'm not quarreling with that. What I'm trying to get at is when we talk about the intent of the act, permanently reserved as a primitive wilderness area, the nomenclature, the lexicon of primitive means something entirely different, legalese if you like.

Mr. LIENESCH. That may be. And in 1937, of course, terminology could have different usage.

Mr. ROE. Thank you very much for your testimony.

We have the panel next. We're fighting time desperately now because some of the witnesses have twice changed their flight plans, and so forth.

It seems to me that we have another witness from the North Carolina Beach Buggy Association, Mr. Deems. And then we have a

panel of about seven or eight other witnesses who are prepared to testify. So why don't we combine everybody. Come on up to the table. Mr. Deems, you'll be first, and then we'll go to Senator Daniels.

You have all submitted statements which we will include in the record in full. I think that we can all agree that we've absorbed the facts behind this, what the facts are in the case. If someone has facts that they want to add, let's deal with that or interpretations of what you see the facts supposedly to be. Or make any changes you might want to make in the facts rather than have to go through every bit of the testimony.

Having said that, let's go to Mr. Deems, of the North Carolina Beach Buggy Association.

The full text of your prepared statements will appear in the record at this point.

[Statements referred to follow:]

STATEMENT OF GEORGE C. DEEMS, IMMEDIATE PAST PRESIDENT AND CHAIRMAN, GOVERNMENT AND AFFILIATED AFFAIRS, NORTH CAROLINA BEACH BUGGY ASSOCIATION, INC., NAGS HEAD, N.C.

INTRODUCTION

The North Carolina Beach Buggy Association is composed of over 1,500 mobile sports fishermen. The association is a non-profit conservation organization dedicated to preserving the natural resources of the coastal areas of North Carolina and leadership in keeping beaches open for recreational purposes by the American public.

Since 1977 the North Carolina Beach Buggy Association has studied with care all bona fide organized group reports, jetty plans, studies and statements that dealt with the construction of jetties at Oregon Inlet, North Carolina, and the effect upon the environment and other methods of stabilization of the channel that could be used in place of jetty construction.

The study of the North Carolina Beach Buggy Association included the careful and complete review of the following major reports and studies concerning jetty construction and hopper dredging.

1. Manteo (Shallowbag) Bay, North Carolina, General Design Memorandum—Phase 1 Plan Formulation C.O.E.—July 1977.
2. Manteo (Shallowbag) Bay—Final Environmental Statement C.O.E.—July 1977.
3. Draft Supplement to the Final Environmental Impact Statement C.O.E.—September 1979.
4. Final Supplement to the Final Environmental Impact Statement C.O.E.—August 1980.
5. Dredging Alternative Developed by U.S. Department of Interior and the U.S. Army Coastal Engineering Research Center, Fort Belvoir, Virginia.
6. Economics of Oregon Inlet—October 6, 1980.
7. Inman Group Reports No. I & II—August 6, 1980.
8. Tidal Inlet Responses to Jetty Construction—GITI Report 19 C.O.E.—October 1981.
9. Report of Coastal Advisory Committee.
10. Oregon Inlet Technical Observation Committee Report April 26, 1982.
11. Reports by Coastal Scientists.
12. The New Jetty Construction Design Released by C.O.E. May 11, 1982.
13. Visit on Hopper Dredge on October of 1983.

After all studies and reports were reviewed, the North Carolina Beach Buggy Association has opposed the construction of jetties at Oregon Inlet. Jetty proponents claim that opposition by the North Carolina Beach Buggy Association, and we quote the CURRENT—October 20, 1983—"comes from a small portion of the group's membership." This statement is very much incorrect. The entire membership of the North Carolina Beach Buggy Association has been, and is presently, well aware of the organization's opposition to jetty construction and the membership has supported the organization's stand.

The membership of the North Carolina Beach Buggy Association is now (1983) the largest in its history. Since January 1, 1983, through October 1983, 325 new mem-

bers have joined, proof positive that the membership backs their organization's stand opposing jetties.

The North Carolina Beach Buggy Association has joined with the following organizations in opposing the construction of jetties on Oregon Inlet, North Carolina.

North Carolina Wildlife Federation;
North Carolina Academy of Science;
North Carolina Chapter of the Sierra Club;
The Conservation Council of North Carolina;
United Mobile Sportsfishermen's Association (composed of 18 East Coast Associations);
National Parks & Conservation Association;
National Wildlife Federation;
National Taxpayers Union;
Sierra Club—National;
Environmental Policy Center;
Wilderness Society;
National Coalition for Marine Conservation;
National Audubon Society;
Barrier Island Coalition;
Garden Clubs of America;
Committee to Preserve Assateague Island; and
Friends of the Earth.

In view of the intensive study by the North Carolina Beach Buggy Association of the Manteo (Shallowbag) Bay Project, Oregon Inlet, North Carolina, the organization *opposes* H.R. 3288 and the amendment that has been "piggybacked" to H.R. 3082 and labeled by one jetty proponent as "ONE OF THE SLICKEST MANEUVERS EVER HEARD OF"—see October 20, 1983 CURRENT, Kill Devil Hills, North Carolina and September 28, 1983 VIRGINIA PILOT, Norfolk, Virginia. One news reporter labeled the amendment "one of the oldest political tricks in the book."

The following outlines a number of reasons why the North Carolina Beach Buggy Association opposes jetty construction.

*1. Loss of irreplaceable beaches*

The Cape Hatteras National Seashore (Park Land) and Pea Island (Refuge Land) when used for construction of jetties and the actual jetties will bring about loss of the entire south beach of Bodie Island (Park Land) and additional beach on Pea Island (Refuge Land) for all recreational use by the public (surf fishing, crabbing, hiking, walking, bird watching, swimming, etc.). See Attachment No. 1 Corps of Engineer's construction plan layout May 1982.

It is important to note that there are only a few beaches on the east coast that offer the wonderful recreational use similar to those at Oregon Inlet. People from all over the nation have enjoyed the Oregon Inlet beaches for many years. These beaches have also provided a very important refuge as a nesting and feeding area for many species of wildlife.

The Army Corps of Engineers' own March 1979 Final Supplement to their Final Environmental Impact Statement estimated, and we quote from the report, "80,000 to 100,000 annual visitor days are associated with surf fishing on the south and north beaches and that annual visitors to the campground ranged from 60,000 to 75,000 camper days."

Since 1979 the public use of these beaches had greatly increased.

Note.—The committee should also be aware of the fact that since May 1982 the distance spacing between the north and south jetties has been widened from 2,500 ft. to 5,000 ft. The North Carolina Beach Buggy Association believes that this new plan design will now cause the loss of the entire north beaches of bodie and additional beach at Pea Island—See Attachment No. 1.

We are now informed that the Corps has revised the jetty design for the third time. For five to six years one design, then a change in 1982 and now another design change in 1983. We wonder if they really know what design should be promoted.

The construction of jetties to benefit a relatively few is a disservice to the hundreds of thousands who will lose the recreational value of the public owned beaches.

*2. Inman reports*

The Inman Report entitled "Report on the Potential Effects of the Proposed Oregon Inlet Jetties on Shore Processes Along the Outer Banks of North Carolina", see Attachment No. 2, is summarized as follows:

1. Short term implications;
2. Intermediate term implications; and

3. Long term implications.

This report states clearly that the jetties would cause serious erosion problems well beyond the project area.

The Inman Reports No. I and No. II and the Economics of Oregon Inlet should be must reading for all those that are concerned with the effects of jetties at Oregon Inlet. For example, one section of the Inman Report entitled "Oregon Inlet: Some Ecological Considerations" by Dr. William Odum of the University of Virginia (see Attachment No. 3) should be of great concern to all those that make their livelihood from commerical fishing.

We request the committee to allow the Inman Reports I & II and the Economics of Oregon Inlet to be included in the record as part of this statement.

*3. Benefit/cost ratio*

The North Carolina Beach Buggy Association is informed that the first benefit/cost ratio of the project ended up 0.30 to $1.00—a very, very poor investment of taxpayer monies.

The Corps of Engineers keep referring to a new economic feasibility statement that will show a favorable benefit/cost ratio. The North Carolina Beach Buggy Association requested a copy of the new study on July 25, 1983. As of this date the new report has not been received. We presume the Corps are having a hard time to show that a plus benefit would occur after spending $600,000,000 (50 year period) of taxpayer monies.

Mr. George Reiger makes a point under the heading of "Conservation" in the January 1983 issue of FIELD & STREAM—see Attachment No. 4.

During the past summer of 1983 the Corps has been counting boats that use Oregon Inlet. Some surf fishermen claim that boats that never went through the bridge to the ocean side of Oregon Inlet were counted many times.

We would suggest that if the Corps wanted to count boats that used the Oregon Inlet channel section of the bridge (ocean side) they should have stationed their counters on the beach on the ocean side of the bridge, not the sound side. Many boats go to the bridge and then drift back in the sound.

During the summer of 1982 the Corps sent surveys to boat owners (21 ft. and over) in 13 counties, asking questions as to boat owners' use of Oregon Inlet. Many of our members who own boats 21 ft. and over never received a copy of the survey. Was a preslected listing made?

During the summer of 1983 sport boats and head boats out of Oregon Inlet Marina asked passengers to sign cards and send to their U.S. Congress representatives telling of the dangers and lost days of fishing because of lack of stabilization of the Oregon Inlet channel. Yet one captain stated that he never lost days because of the condition of the channel but lost days because of the bad weather outside of the channel—beyond where the jetties would be built.

On November 4, 1983, the Corps sent fishermen holding commercial licenses a 3 page survey. The carrying letter stated in part—

"The Wilmington District Corps of Engineers is trying to clarify some information previously obtained on the use of Oregon Inlet.

"We are not interested in the quantities of fish landed, only the number of fishing trips you made."

From all indications the Corps is still trying to come up with a new economic feasibility study that will show a benefit, but it is hard to understand how a benefit can be obtained without quantity of fish carried included.

*4. Conflicts*

*A. Final Environmental Statement by Army Corps*

We refer to the Final Environmental Statement by the U.S. Army Corps of Engineers, March 1977 (in Attachment No. 5 and No. 6).

Yet as late as May 31, 1983, the Corps District Office at Wilmington, North Carolina, stated to many persons who wrote opposing jetty construction the following, and we quote:

"The stabilization of Oregon Inlet by means of jetties is an intrinsic and key part of a navigation network to serve an expansion and moderization of the fisheries industry of northeastern North Carolina. The nucleus around which this industry will grow and thrive is a seafood industrial park being developed by the State of North Carolina at the village of Wanchese, North Carolina, situated about 10 miles north of Oregon Inlet."

We can only wonder why government officials and members of the United States Congress allow the Corps to continue to use the seafood park at Wanchese, North

Carolina, as a means of bringing about jetty construction when their own Final Environmental Statement is in direct conflict with the Corps is now telling the public.

*B. Coastal Barrier Resources Act*

This act prohibits most forms of federal expenditure and development assistance for fragile barrier island seashores. In the opinion of many, any construction in the Oregon Inlet area would run contrary to the intent of the law.

The following is a statement, in part, dated November 5, 1982, by Dr. Paul J. Godfrey, Associate Professor, University of Massachusetts, Amherst, Massachusetts, in reference to Oregon Inlet, North Carolina.

"All attempts that I know of to jetty and stabilize such dynamic inlets have failed, or have made the local situation much worse. The main problem is that once the updrift side of an inlet is jettied, all the sand moving down the beach piles up on that jetty. At the same time, sand that would have moved into and then out of the inlet, or along the shoals to seaward, is now blocked. However, waves are not blocked, and soon the downdrift side of the inlet begins to erode. The jetties will change the configuration of the barrier island system, and result in substantial erosion of Pea Island National Wildlife Refuge. There are many examples where jettying inlets has led to ever increasing problems: one good example is at Ocean City, Maryland and another is at the east end of the Cape Cod Canal in Massachusetts. I could site many more. I know of no successful engineering solution to this problem."

"This project is a classical case of the kind of federally subsidized interference on barrier islands that has now been greatly restricted by the recently passed Coastal Barier Resources Act—S. 1018, H.R. 3252 (Chafee-Evans bill)."

*5. Performance of jetties*

It is generally known that the majority of jetties on the east coast have not performed satisfactorily. The following is a statement by Mr. Henry Lyman, Publisher of Salt Water Sportman.

"Concerning construction of jetties at Oregon Inlet, I would look with more favor on such a project if the U.S. Army Corps of Engineers could show me just *one* example of success on the East Coast of such construction. I am very familiar with jetties that have been built in the past along this coast and, in every case, regular dredging has been required to keep the channels open even after the jetty construction. Why spend millions on a system that has never worked as planned? . . ."

The GITT Report 19 entitled "Tidal Inlet response to Jetty Construction" October 1981 by the U.S. Army Coastal Engineering Research Center, Fort Belvoir, Virginia, Department of C.O.E., carries the following statements in part.

*"Grays Harbor Entrance.*—the south jetty rapidly began to deteriorate owing to wave action. . . . reconstruction was necessary to raise the jetty . . . it became necessary to dredge the channel . . . dredging continued annually from 1935 to 1939, the entire south jetty was reconstructed . . . the channel area steadily decreased as both jetties deteriorated . . . channel improvements were only temporary; within 4 years, a second jetty was necessary . . . the channel area decreased as the jetty deteriorated from wave action . . . when the second jetty was added at Grays Harbor, and thus was too large to be maintained by the tidal prism. The channel area decreased 36 percent shortly after the jetty was constructed.

*"Tillamook Bay Entrance.*—Shortly after completion of the north jetty, both the north and south beach shorelines receded as the jetty deteriorated . . . deterioration also caused increased shoaling in the channel. Dredging has been necessary . . . After jetty construction, the minimum channel cross-sectional area increased about 20 percent due to dredging. Thereafter, the minimum area decreased to about 50 percent of the unimproved area.

*"Umpqua River Entrance.*—rapid decrease in channel area following the start of jetty construction . . . Maintenance dredging of the ocean entrance began immediately after completion of the jetty . . . 200,000 cubic yards of sediment continues to be dredged annually from the outer reach of the channel to achieve project dimensions.

*"Masonboro Inlet.*—By 1973 the channel closely paralleled almost the entire jetty length, causing undermining of the rubble section which required toe protection for the structure . . . The larger channel area in 1967 was primarily due to dredging . . . Between 1964 and 1973, the inlet throat width was reduced 1,200 feet." (Neill P. Parker, Coastal Engineering Research Center, Fort Belvoir, Virginia, stated in his article entitled 'Weir Jetties': "The system at Masonboro is not functioning as intended."

*"Humboldt Bay.*—As the updrift jetty extended seaward beyond the downdrift one, the channel migrated toward it, remaining there until the jetty had deteriorated to the point that the channel once more began to move downdrift.

"*Coquille River Entrance.*—Annual dredging has been required between the jetties to maintain the channel design depth.

"*Merrimack River Entrance.*—Channel dredging began in 1938 (U.S. Congress 1953).

"*Newport Harbor Entrance.*—Dredging in the entrance became necessary by 1930. After construction of the west jetty, both the west and east beaches eroded. The west beach eroded 200 feet by 1921 and a landward extension of the west jetty became necessary to prevent flanking.

"*Fernandina Harbor Entrance.*—Both were low tide jetties, and the influx of sand across the updrift jetty formed a shoal in the channel. The growth of this shoal forced the channel against the downdrift jetty (Blackman, 1938) so extension of the updrift jetty and dredging of the entrance channel became necessary.

"*St. Johns River Entrance.*—Construction of a downdrift jetty immediately adjacent to the existing channel was begun but this still did not improve channel conditions. A second jetty on the updrift side of the channel was constructed . . . . . the channel position was maintained between the jetties by dredging.

"*Coos Bay Entrance.*—The channel migrated toward the jetty, but depths in the channel were not navigable; channel dredging was initiated.

"*Aransas Pass.*—The navigation channel steadily decreased in depth following construction of the Haupt jetty and moved closer to the jetty; a second channel began to develop in the gap between the Haupt jetty and the shore . . . it became necessary to connect the Haupt jetty to the shoreline and construct a south jetty.

"*Manasquan Inlet.*—The jetty completely failed to stabilize the channel so the inlet closed again . . . Twin jetties were constructed at the entrance in 1931, and dredging was begun to keep the inlet open."

A very nearby example of the failure of two stone jetties is at Assateague, Maryland. See the following quote from the Baltimore Sun, May 2, 1983.

"The Army Corps of Engineers was asked to stabilize the inlet so it would not shoal in, as usually happens when the outcome is left to nature. By 1935 the Corps had built two stone jetties.

The north jetty at Ocean City immediately began trapping huge quantities of sand transported along the coast by currents near shore. Since the sand in this region flows predominantly north to south, that meant the sections of Assateague just to the south, across the new inlet, were being starved for sand.

As a result, Assateague's northern section erodes up to 40 feet a year. And the ocean washes more often across the narrowed land mass."

Mr. George Reiger, under heading CONSERVATION in the August 1983 issue of Field & Stream, stated in part:

"Even if the entire Army Corps of Engineers' budget were sunk into a massive Atlantic seawall from Nag's Head to Morehead City, the ocean would immediately begin redesigning the barrier to its own capricious specifications."

The following are statements from A Guide to Coastal Hazards by the Massachusetts Coastal Zone Management, March, 1983.

"*Jetties.*—Jetties are elongate structures similar to groins except that they are built at the seaward side of coastal inlet or harbor. Their purpose is two-fold: to stabilize the inlet and prevent shoaling of the inlet by sand carried by littoral drifting. To completely halt transport of sand into the inlet, the updrift jetty must reach seaward to deep water beyond the littoral zone. As a result, sand nourishment to beaches downdrift on the inlet is severely restricted or cut off altogether causing starvation and rapid erosion.

The long jetty on the northwest side of the Cape Cod Canal traps much of the sand which reaches it, causing severe erosion of the beaches of the canal.

"*Planning for the Future.*—The major manmade obstacle to sediment transportation is the Cape Code Canal and its jetties, which (unless corrective action is taken) can be expected to continue producing accretion of Scusset Beach and erosion of the Sandwich shoreline east of the canal. Lesser, but still significant effects will result from the existing seawalls, harbor jetties, and groins throughout the area. In planning for the future the protective characteristics of coastal features can be best preserved by:

(a) not adding to existing disturbances, and

(b) removing or minimizing disturbances

It is clear that most historical and present day coastal hazards are in reality natural processes which adversely affect man because of improper development of coastal areas. In an attempt to reduce these hazards man has built coastal engineering structures which have in many areas diminished or destroyed the coast's natural defensive system. These structures have had a compounding negative effect by creating an illusion of security which has promoted further coastal development. The

best way to be spared of the 'hazards' is to avoid developing in areas which are subject to predictable change due to coastal forces and processes."

*6. Loss of economic income*

The loss of the beach at Oregon Inlet for thousands and thousands of recreational users will result in heavy loss of income for motels, restaurants, gasoline stations, grocery stores, tackle shops and others when visitors find their public recreational beaches have been lost.

We believe that the loss of income will far outweight any gain of income through seafood processing at Wanchese, North Carolina.

*7. Fishing from jetties*

Jetty proponents are now telling the merits of jetty fishing. A study of jetty fishing on the east coast shows:

1. Jetty fishing is accompanied by near or actual tragic drownings.
2. A false step on a slippery rock can spell disaster. Most jetty fishermen don't stay on the concrete strip if provided, it is too hard to land a fish. They move out on the rocks.
3. Nearly all productive fishing on jetties is accomplished at night, therefore the dangers increase tenfold. It is hard to retreat from stormy weather with fishing gear—boots, etc.
4. Jetty fishing is confined mostly to the hardy individuals because the young and old cannot compete with the weather changes involved. Beach fishing can be enjoyed by all.
5. Landing a fish from a rock jetty can be a real task, day or night.
6. Invariably, after jetty fishing is promoted as an inducement for construction, an accident occurs and public access is either sharply restricted or even entirely banned. Few of the administrative agencies involved seem to desire the liability responsibilities.
7. When unpredictable weather changes develop (squalls, lightning, etc.) those out on a 4,200 or 3,750 foot long jetty into the ocean have to make a hasty retreat. This is when the trouble starts. Can you imagine the young and old out fishing on 4,000 foot and 3,000 foot jetties?
8. Who repairs the jetty walk—clean it up, man life guard stations and handle the many problems that occur?

In no manner could the North Carolina Beach Buggy Association support jetty fishing as a viable alternative to preserving the current beach fishing status which is enjoyed by all.

SUMMARY

The North Carolina Beach Buggy Association urges this committee to remove the Oregon Inlet provisions of HR 3082 and allow jetty construction to be considered on its own merits.

With the Federal deficit well over one trillion dollars, why spend $600,000,000 or more of taxpayers' monies on a questionable project—a project that gambles with the environment of the Outer Banks of North Carolina.

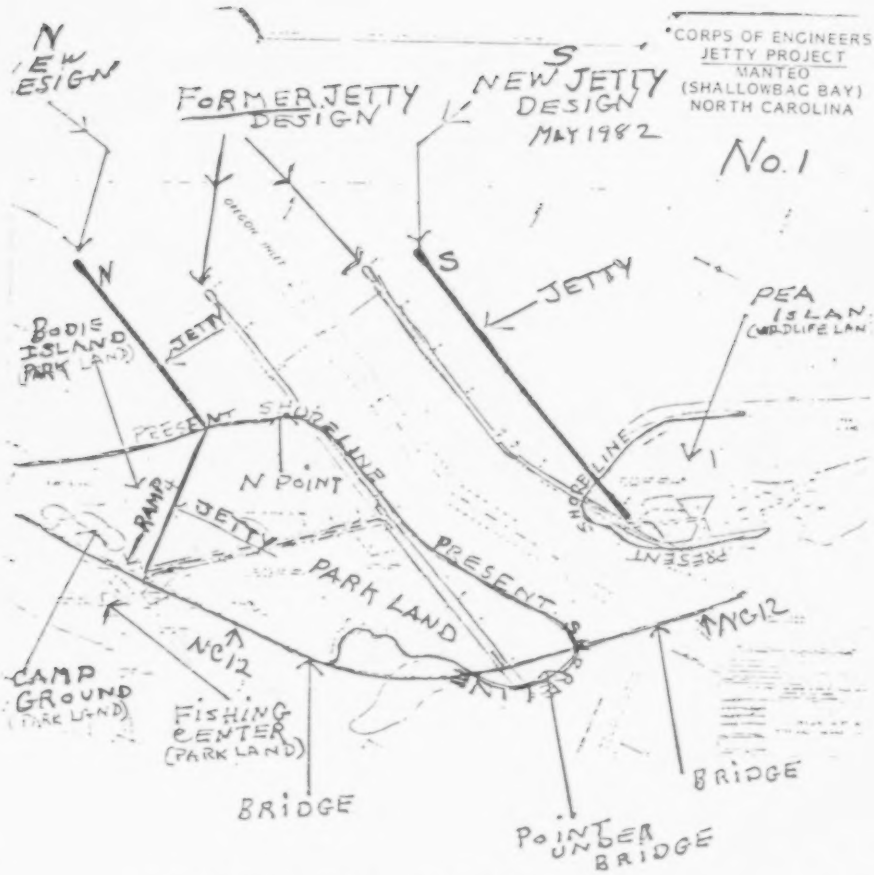
We urge the committee to allow hundreds of thousands of present and future generations to continue to enjoy the recreational use of the beaches at Oregon Inlet.

The North Carolina Beach Buggy Association does not believe that this honorable committee will be part of "one of the slickest maneuvers ever heard of."

Let the Oregon Inlet Jetties stand or fall on its own merits—not "piggybacked" on HR 3082, a bill that has no relation whatsoever to jetty construction.

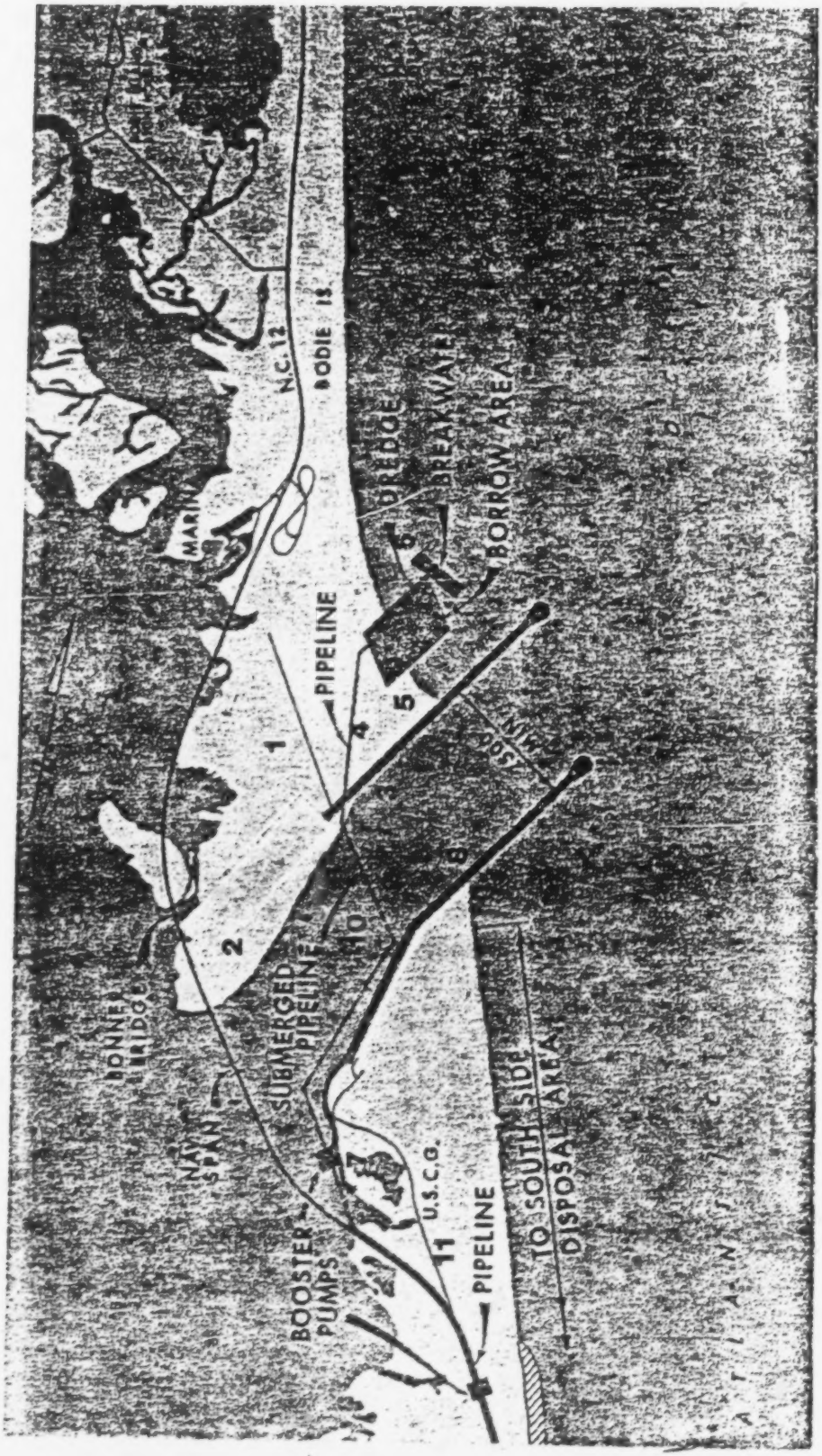
The North Carolina Beach Buggy Association supports the need for safe and adequate channel through Oregon Inlet and urges this committee to recommend that such a channel be obtained by hopper dredging with sufficient funding.

We appreciate the opportunity to give this testimony and would be happy to provide any additional information that the subcommittee would request.




THE ABOVE JETTY CONSTRUCTION PLAN LAYCUT BY THE ARMY CORPS OF ENGINEERS CLEARLY SHOWS THAT THE BEACHES AT OREGON INLET WILL BE LOST FOREVER IF THE JETTIES ARE CONSTRUCTED.

THE NORTH JETTY GOES RIGHT BESIDE RAMP 4 AND THE CAMPGROUND AFTER ANCHORAGE FOR THE JETTIES IS ADDED AND BEACH DISPOSAL AREAS ARE USED. THE ENTIRE NORTH BEACH OF BODIE ISLAND WILL BE LOST FOREVER FOR RECREATIONAL PURPOSES BY BOTH PRESENT AND FUTURE


BONNER BRIDGE
MARINA
N.C. 12
ODIE IS.
DREDGE
BREAKWATER
BORROW AREA
PIPELINE
SUBMERGED PIPELINE
NAV. SPAN
BOOSTER PUMPS
U.S.C.G.
PIPELINE
TO SOUTH SIDE
DISPOSAL AREA
ATLANTIC
1
2
3
4
5
6
7
8
9
10
11

## Report on the Potential Effect of the Proposed Oregon Inlet Jetties on Shore Processes Along the Outer Banks of North Carolina

During August of 1979, the National Park Service retained the services of four coastal scientists to review the U S Army Corps of Engineers' plans to stabilize Oregon Inlet by constructing two rock jetties and related engineering work. The Review Panel included Dr. Douglas L. Inman, Professor and Director of Coastal Oceanography, Scripps Institution of Oceanography, La Jolla, California; Dr. John C. Kraft, Professor and Chairman of the Department of Geology, University of Delaware, Newark, Delaware; Dr. Robert A. Dalrymple, Associate Professor of Marine Engineering, University of Delaware, Newark, Delaware; and Dr. Rober Dolan, Professor, Department of Environmental Sciences, University of Virginia, Charlottesville, Virginia. The Panel members' areas of expertise are as follows: Dr. Inman, inshore processes; Dr. Kraft, geology of barrier islands; Dr. Dalrymple, coastal engineering and inshore processes; and Dr. Dolan, barrier island processes, especially the history of erosion and overwash along the Outer Banks of North Carolina. These specialists have a combination of over 75 years of research in coastal processes and coastal engineering; they have published over 300 reports, journal articles, and books; and, they have visited coastal sites in more than 30 nations around the world.

The Review Panel meeting was held in Manteo, North Carolina, on August 12, 13, and 15, 1979. The procedure included an in-depth review of the U.S. Army Corps of Engineers plans, their EIS, and the EIS supplements; a briefing by National Park Service and Fish and Wildlife Service personnel; and, on-site visit to the proposed project area. Following this review of background material and a group discussion, each Panel Member was asked to summarize in writing his opinion of the potential short-term (1 to 3 years), intermediate-term (5 to 10 years), and long-term (10 to 50 years) implications of the project. The following paragraphs summarize the individual Review Panel reports:

### (1) SHORT-TERM IMPLICATIONS

The Oregon Inlet jetties will have significant impact on the shorezone processes along the Outer Banks. Land areas adjacent to the inlet will be greatly altered. The Panel was unanimous in its concern about modifications in sand transport processes along the coast, and the plan for sand to bypassing, including the annual to biannual schedule. Without a very efficient sand bypassing scheme, negative environmental impacts of the project will be maximized.

Regardless of statements to the contrary, the jetties, as designed, will probably (or surely) accelerate already high erosion rates adjacent to the inlet. Pea Island for 2 to 5 miles south of the jetties will undergo rapid beach and dune erosion, dune breaching, overwash, and associated flooding. The rate will be far in excess of the Department of Interior's concept of a "normal" for the Outer Banks. The transition from a policy of managed and stabilized landscapes to a policy of islands existing in a somewhat natural condition will surely be tested. In fact, assuming either annual or less frequent sand bypassing, Pea Island will probably undergo such rapid and highly variable changes that the present refuge management policy will require reassessment.

### (2) INTERMEDIATE-TERM IMPLICATIONS

Alteration of normal longshore sediment movement by construction of the jetties will probably cause serious erosion problems well beyond the project area. Shoal areas that presently serve as important substrate for marsh grasses, as well as feeding and nesting areas for birds, will be greatly modified. The jetties will also result in significant alteration in the water masses passing into and out of Oregon Inlet, especially the exchange of fine grain sediment and organic detritus. Without mitigation the sea turtle habitat south of the inlet will be lost.

### (3) LONG-TERM IMPLICATIONS

The unstable nature of the Atlantic coast barrier islands and the potential implications with regards to the Oregon Inlet jetty system is of major concern. The barriers are migrating toward the mainland by storm overwash and inlet formation and closure. This is an indisputable fact. The geological process has been stalled temporarily along the Outer Banks by dune construction and sand stabilization. In order to maintain the jetties as functional structures, the barrier islands themselves adjacent to the inlet will also require stabilization. For the life of the Oregon Inlet project, and none of the Panel members believed it would be limited to a 50-percent

project once installed, barrier island stabilization may be an impossible goal without additional engineering works. Regardless, the jetties will probably require signficant alteration in the future if they are to serve their purpose, including extension seaward and maintenance dredging of the channel.

#### (4) CONCLUSION

The Review Panel experts have serious doubts about the advisability of stabilizing Oregon Inlet. These reservations include concern about the actual jetty design, in particular the sand bypassing scheme, and the potential short, intermediate, and long-term environmental impact, both physical and ecological.

### Oregon Inlet: Some Ecological Considerations

DR. WILLIAM ODUM, DEPARTMENT OF ENVIRONMENTAL SCIENCES, UNIVERSITY OF VIRGINIA, CHARLOTTESVILLE, VIRGINIA

The Oregon Inlet jetties could pose at least two potential problems for the ingress and egress of post-larval and juvenile fishes and invertebrates between the Atlantic Ocean and Pamlico Sound. The first problem involves the ingress of post-larval fishes and invertebrates from offshore. Many species, including the blue crab, Panaeid shrimp, spot, croaker, sea trout, channel bass, and black drum utilize the less turbid, higher salinity water off the beaches for spawning purposes. This means, however, that the recently spawned larval and post-larval forms must find their way back into the estuary as rapidly as possible. This influx occurs through inlets such as Oregon Inlet. Obviously, anything which changes hydrographic conditions around the inlet mouth, such as a jetty, may interfere with this migration. The degree of interference from structures such as jetties is totally unknown.

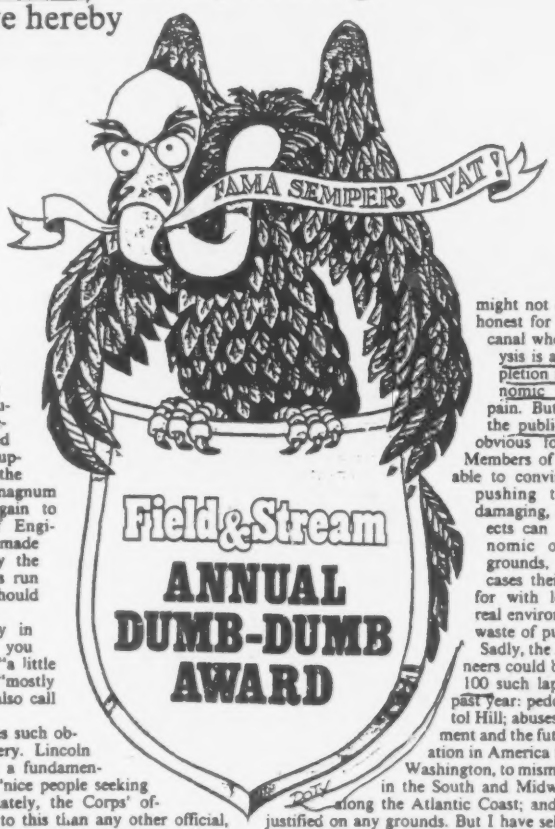
The second problem involves the offshore movement of juvenile and adult fishes and invertebrates which are leaving the estuary on their way offshore to spawn. Whether the alternatives caused by the jetties will affect the mortality rate significantly is also not known. It is possible that the presence of the jetties would funnel the migrating fishes into a restricted plume which would dump them suddenly into deep water; a situation which might be analogized to a cafeteria line for larger, predatory fishes.

No. 4

# Conservation

## Every year a wide range of acts of environmental folly are committed. Lest they forever go unheralded, we hereby bring you . . .

BY GEORGE REIGER




Once again it's time for the Dumb-Dumb awards and, as usual, there are plenty of candidates. This year the theme is Integrity, or more accurately, the lack thereof, especially among the so-called public servants who are supposed to be guardians of the public good. And this year's magnum Dumb-Dumb goes once again to the U.S. Army Corps of Engineers for falls from virtue made all the more distressing by the fact that the organization is run by military officers who should be above reproach.

Integrity is like virginity in that you either have it or you don't. Just as you can't be "a little pregnant," you can't be "mostly honest"—not, that is, and also call yourself a "public servant."

Not all dishonesty involves such obvious acts as theft or bribery. Lincoln Steffans once observed that a fundamental source of corruption is "nice people seeking special privilege." Unfortunately, the Corps' officers are no more immune to this than any other official, public or private, in a position to make important decisions. After all, when the pet project of some politician (or corporate power) is at stake, it's a lot easier and safer to rationalize away objections than it is to say no and risk incurring the wrath of the powerful.

Such acts of expediency can even be done by persons who feel they are entirely virtuous. As an officer of the Corps, Charles Curran, once said to former Tennessee Valley Authority director Arthur E. Morgan:

"I am not impressed with a number of my colleagues in that they consider themselves honest if they don't accept any personal gain. The fact that they come up with an unsound report that will help someone politically means that they do not recognize intellectual dishonesty."

Thus, a Corps officer who bows to political pressure—or even to personal ambition in wanting to move up in rank—might not consider himself dishonest for approving a dam or canal whose cost-benefit analysis is a lie and whose completion spells long-term economic and environmental pain. But such actions cheat the public as surely as more obvious forms of corruption. Members of the Corps might be able to convince themselves that pushing through expensive, damaging, and unneeded projects can be justified on economic or "flood-control" grounds, but in far too many cases their conviction is paid for with lost integrity . . . and real environmental damage and waste of public funds.

Sadly, the Army Corps of Engineers could be cited for well over 100 such lapses of integrity this past year: peddling of lies on Capitol Hill; abuses against the environment and the future of outdoor recreation in America from Gray's Harbor, Washington, to mismanaged river systems in the South and Midwest; dredging scams along the Atlantic Coast; and dams that can't be justified on any grounds. But I have selected one particular instance of dishonest behavior that seems representative of the problem as a whole.

Last April, Federal District Court Judge Thomas P. Griesa enjoined the federal government from paying $90 million to New York City for a proposed landfill of the interpier areas along the lower west side of Manhattan as part of the controversial Westway highway project. The reason for the court order was that this section of broken-backed piers and crumbling bulkheads is possibly the most important wintering ground for juvenile striped bass anywhere in the New York Bight.

Between fifteen to a hundred times as many young stripers can be found here in December as anywhere else in the region. Non-Corps research also discovered significant concentrations of a half-dozen other littoral fishes. Although the Chesapeake Bay and its tributaries *(Please turn the page)*

ILLUSTRATED BY ROY DOTY

FINAL (No. 5)

# ENVIRONMENTAL STATEMENT

# WANCHESE HARBOR DEVELOPMENT PROJECT

e. COMMENT: As it stands now, it appears that the harbor dredging permit will be used to obtain grant money to develop the industrial seafood park -- and then these facilities will be used to justify stabilizing - Oregon Inlet.

RESPONSE: No, should the Corps of Engineers issue a permit for the proposed dredge and fill action, it will not be used to obtain an Economic Development Administration monetary grant. The State must apply separately to the Corps for the dredge and fill permit and separately to E.D.A. for the monetary grant. Under E.D.A. regulations, if the action for which a development grant is requested requires an EIS, the EIS must be completed in accordance with the Council on Environmental Quality Guidelines prior to their accepting a grant application. See also the Introduction of the Final Environmental Statement. Further, the harbor and associated facilities will not be used to justify stablization of Oregon Inlet. Economic viability of the authorized Federal Manteo (Shallowbag) Bay project, of which stabilization of Oregon Inlet is a part, must be established by the Corps of Engineers prior to Congress appropriating funds for construction. Also, the State of North Carolina has made the determination that development of Wanchese Harbor is economically viable without stabilization of Oregon Inlet.

U. S. ARMY ENGINEER DISTRICT, WILMINGTON
ECONOMIC DEVELOPMENT ADMINISTRATION
MARCH 1977

No 6

EXHIBIT "B"

# Wanchese project, jetties conflict with environmental statement

## To the Editor:

Dear Editor:

The article by Gwen White, Dare County Bureau, carried in The Advance on Aug. 25 quoted the following statement as made by Governor Hunt:

"...The state also has a $7 million to $8 million investment in the seafood industrial park. We must do everything we can to protect that investment to help the park achieve its full potential and to revitalize the overall economy of Northeastern North Carolina."

The article went on to say:

When Congress authorized the jetty construction in 1970 it was with the stipulation that a non-federal entity develop, operate, and maintain an expanded harbor in Wanchese.

The state and Dare County accepted that obligation and built the park that has been virtually empty since then because the federal government has not permanently stabilized the inlet.

We believe your readers should know that the Wanchese Park cost a total of $7,600,387 with investment from the State of North Carolina of $2,500,000; the Coastal Plain Regional Commission, $585,000; and the Economic Development Administration, $4,615,385. Therefore the statement of $7 million to $8 million being invested by the State of North Carolina is incorrect. (The source of this information is Hon. John B. Breaux, chairman of the Subcommittee on Fisheries & Wildlife Conservation & the Environment, U.S. House of Representatives).

We believe your readers should also know that on page 55 of the March 1977 Final Environmental Statement for the Wanchese Harbor Development Project, a comment is responded to as follows:

COMMENT: ...It appears ...the industrial seafood park ...will be used to justify stabilizing Oregon Inlet.

RESPONSE: ...The harbor and associated facilities will NOT be used to justify stabilization of Oregon Inlet. Economic viability of the authorized Federal Manteo (Shallowbag) Bay project ...must be established by the Corps of Engineers prior to Congress appropriating funds for construction. Also the State of North Carolina HAS MADE THE DETERMINATION THAT DEVELOPMENT OF WANCHESE HARBOR IS ECONOMICALLY FEASIBLE WITHOUT STABILIZATION OF OREGON INLET.

A follow-up comment raised the matter of "piecemeal ...incremental decision-making." Part of the response on page 56 re-emphasizes the point made above:

RESPONSE: ...The State of North Carolina ...has made the determination that they will construct and operate the harbor/Seafood Industrial Park complex REGARDLESS OF WHETHER the Corps of Engineers constructs the ...project.

The use of the Wanchese project to obtain the right to build jetties is in direct conflict with their own Final Environmental Statement.

George C. Deems
North Carolina Beach Buggy Association, Inc.
Kill Devil Hills

Daily Advance - E. City, NC 9/7/83

123

The Baltimore SUN - May 2, 1983

# Assateague erosion may close small bay's outlet to ocean

By Tom Horton

The rapid erosion at the Assateague Island National Seashore, caused by man's stabilization of Ocean City's inlet just to the north, could merge the upper end of Assateague with the mainland in less than 20 years, a National Park Service official said yesterday.

A complete remedy to the situation, including pumping offshore sand to rebuild Assateague's beach, could cost $9 million, plus $1.6 million a year for maintenance of the sand, said Michael Finley, park supervisor at the island.

But to do nothing would be expensive also, he told a conference of environmentalists here. In addition to the substantial loss of land in a park visited by two million people a year, continuation of the erosion plaguing the island's northern 5 miles could harm both development and the environment:

• The Worcester county mainland, including Ocean City's airport, would face a higher risk from coastal storms and flooding without the protective barrier island to absorb the brunt of wind and waves.

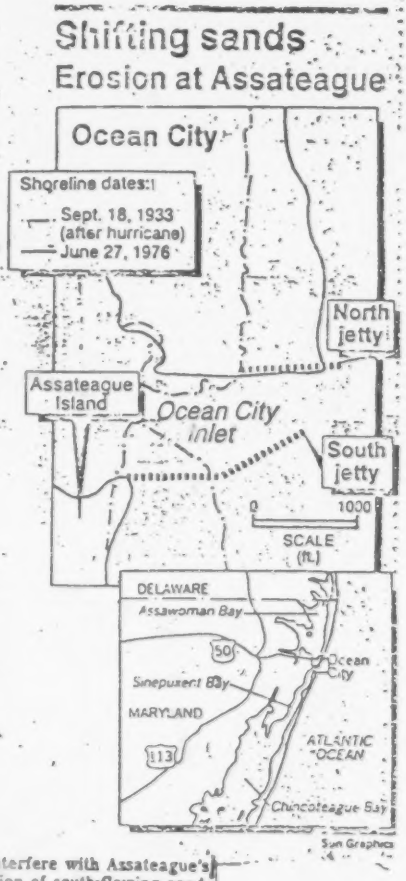
• A merger at Assateague's northern end could radically alter the environment of Sinepuxent Bay by closing off any regular communication with the ocean on that end. The bay is an important shellfish- and crab-harvesting area, a prime spawning grounds for fish, and popular with pleasure boaters from Ocean City.

• The rest of Assateague would be more subject to being cut through by inlets. After major storms washed over the island, the water pent up in Sinepuxent Bay could no longer flush out through Ocean City inlet, and would be more likely to burst through the barrier island from the mainland side.

The complex mechanisms of coastal sand transport that are the key to Assateague's problems have become better understood just in the last few years, Edward Fulford, a planner from the Corps of Engineers, told the annual meeting of the Committee to Preserve Assateague.

A great hurricane in the late summer of 1933

See ASSATEAGUE, D2, Col. 5




## ASSATEAGUE, from D1

cut the inlet that now forms the southern terminus of Ocean City. It was immediately viewed as an asset to the growing resort, as it opened boat access to Ocean City's Assawoman Bay.

The Army Corps of Engineers was asked to stabilize the inlet so it would not shoal, as usually happens when the outcome is left to nature. By 1935 the corps had built two stone jetties.

The north jetty at Ocean City immediately began trapping huge quantities of sand transported along the coast by currents near shore. Since the sand in this region flows predominantly north to south, that meant the sections of Assateague just to the south, across the new inlet, were being starved for sand.

In more recent years, the north jetty has trapped about all the sand it can hold. The beach is so broad that Ocean City has built a big parking lot here.

But the corps now feels, Mr. Fulford said, that the stabilized inlet continues to interfere with Assateague's natural ration of south-flowing sand. Some is trapped by the inlet, and a great deal more is deposited by currents about a mile offshore.

As a result, Assateague's northern section erodes up to 40 feet a year. And the ocean washes more often across the narrowed land mass, depositing abnormal amounts of sand in Sinepuxent Bay, bringing merger with the mainland ever closer.

Meanwhile, the Corps of Engineers is acting to preserve the south jetty, on the Assateague side of the inlet, a move it thinks may give partial relief from the erosion. The corps recently discovered currents were scouring the inlet's bottom next to the jetty so rapidly — from 40 feet to almost 60 in recent years — that it was in danger of caving in.

In an emergency, $5 million project to save the south jetty, the corps is armoring the bottom of the deep hole with huge rocks and rebuilding the south jetty in a way it thinks will trap some extra sand on the eroding north tip of Assateague.

SUPPLEMENTAL STATEMENT—2-7-84

To: Subcommittee—on Water Resources
By: George C. Deems NCBBA
Re: Oregon Inlet, N.C. Jetties HA3082

Impact of jetties on recreational use and wildlife on beaches of seashore and refuge lands at Oregon Inlet, N.C.

Source: Manteo (Shallowbag) Bay N.C. Plan Formulation U.S. Army Corps of Engineers July 1977

"During operation of the sand by-passing portion of this project, significant portions of the beach on both Bodie Island and Pea Island will be utilized for placement of the spoil discharge. The impacts shall not be insignificant as most of the sand by-passing operation will probably occur during the peak visitor season."

"The construction phase entails fencing off from visitors use perhaps 350 acres (all area south of the Campground) on Bodie Island and 14 acres on Pea Island during the 3 year construction period."

"The jetties should either be designed to be as safe as possible for such visitor use or provisions made for complete closure to visitor use and enforcement of the closure."

"Visitation figures for Pea Island National Wildlife Refuge in 1976 included 1,646,075 individuals . . . 711,935 were wildlife oriented. The northern end of the refuge gets most of the public use and this is the area that probably will be most adversely affected by the jetties."

"Lands between north jetty site and inlet is an exceptionally valuable area for nesting and feeding marine and wading birds. Disturbance of birdlife in this area during construction is certain. However, if construction of the north jetty leads to eventual loss of now accreting lands, prime bird feeding grounds and developing salt marsh will be a permanent loss."

Sand by-passing Bodie Island to Pea Island and Pea Island to Bodie Island—Bodie "Two to three months 3000 feet of beach north of north jetty restricted for recreational use." Pea Island "Possible impact on beach use at Campground and Coquina Beach."

"O.R.V. use would be reduced by about 3,300 vehicles per year. These 3,300 vehicles may then utilize other beachfront areas, possibly causing overcrowding conditions."

The U.S. Army Corp of Engineers says other beaches could be utilized. Just because there is 100 miles of seashore it does not mean it is all open. See map below of Cape Hatteras National Seashore as of July 1983. Many miles of this beach are closed. Furthermore, visitor use has greatly increased since 1976.

# 1983 CAPE HATTERAS NATIONAL SEASHORE
## ACCESS & ROUTES MAP

# Numbered ORV access.
Present number gives approximate miles south of junction of NC 158 and NC 12 at South Nag's Head.

xxxx Closed to vehicles May 25 - September 10.

ccc Closed to vehicles all year.

ooo Critical erosion areas. When open to vehicle travel operator should keep abreast of tide and weather conditions

Note: Any portion of the beach is subject to temporary closure to ORV use when conditions warrent. Please observe signing.

1. ORV's shall enter beach only at designated numbered ramps.

2. Driving is restricted to designated roadways which for ORV's includes only that portion of beach which lies between the foot of the dune and the ocean. Driving on or between dunes except on marked routes is prohibited.

3. All motor propelled vehicles must have a current State road registration (license) and the operator of each vehicle must have a current drivers license.

4. All ORV operators shall proceed with due caution and consideration for other beach users. ORV operators shall be alert to persons walking, fishing, standing, sitting, lying or otherwise using the beach, and upon approaching them shall slow down, detour around, or take whatever other precautions necessary to protect safety of other beach users.

5. No person or ORV shall enter posted bird nesting area during nesting season. (May-June)

6. No ORV shall enter posted turtle nest area during season. (September-October)

7. Vehicular travel west or northwest of NC 12 is permitted only on established trails.

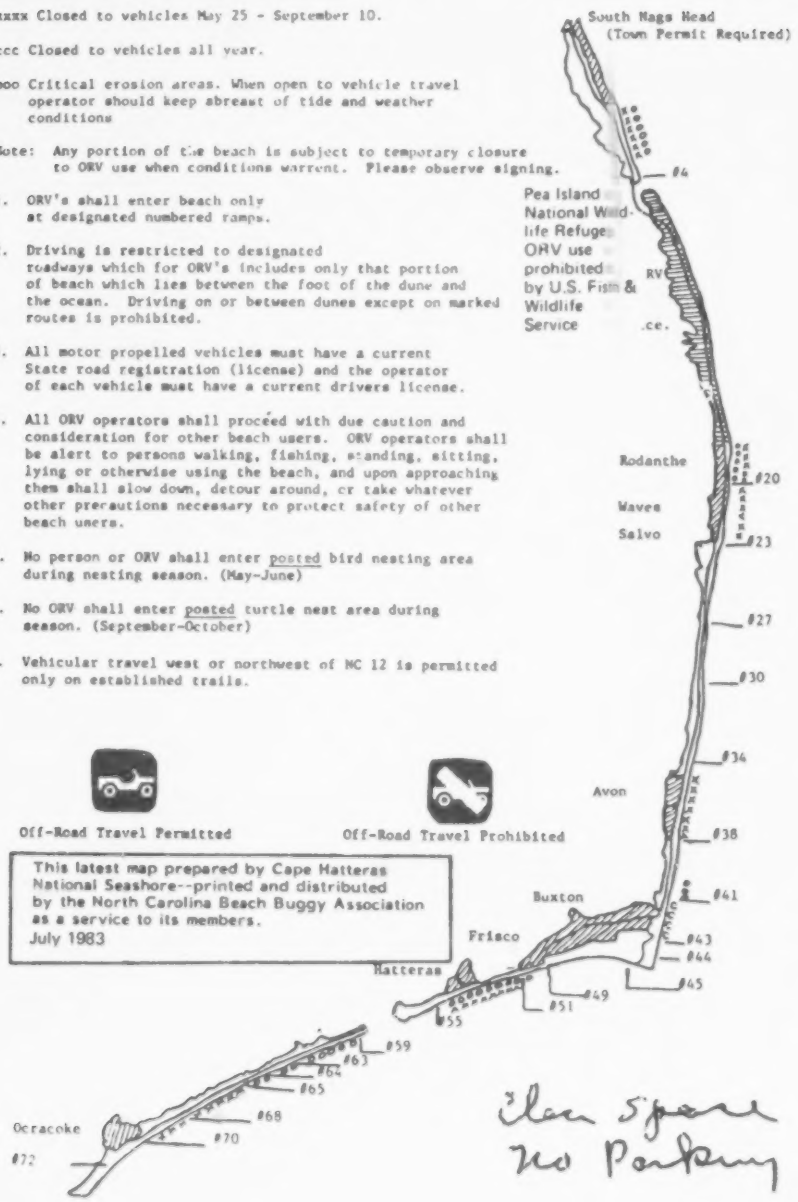


Off-Road Travel Permitted



Off-Road Travel Prohibited

This latest map prepared by Cape Hatteras National Seashore--printed and distributed by the North Carolina Beach Buggy Association as a service to its members.
July 1983




Clam Spare
No Parking

Source: Final Environmental Statement U.S. Army Corps of Engineers July 1977

Visitor Use Activities of Cape Hatteras National Seashore during 1976 (does not include Pea Island)

| Activity: | *No. of Individuals* |
|---|---|
| Visitor center | 371,385 |
| Protected swimmers | 233,658 |
| Unprotected swimmers | 342,690 |
| Surfers | 183,446 |
| Surf fishing | 468,677 |
| Picnicking | 207,213 |
| Sight seeing | 305,506 |
| Nature Trails | 81,567 |
| Hunters | 2,668 |
| Total | 2,196,810 |
| Less visitor center | 371,385 |
| Total | 1,825,425 |

Source: Final Supplement to the Final Environmental Impact Statement August 1980

*Oregon Inlet Campground.*—"During periodic sand by-passing operation . . . pipeline dredge will be operating 2,000 to 4,000 feet from Campground. Dredging time would require between 2 and 3 months each year with bypassing taking place during the months of May thru August."

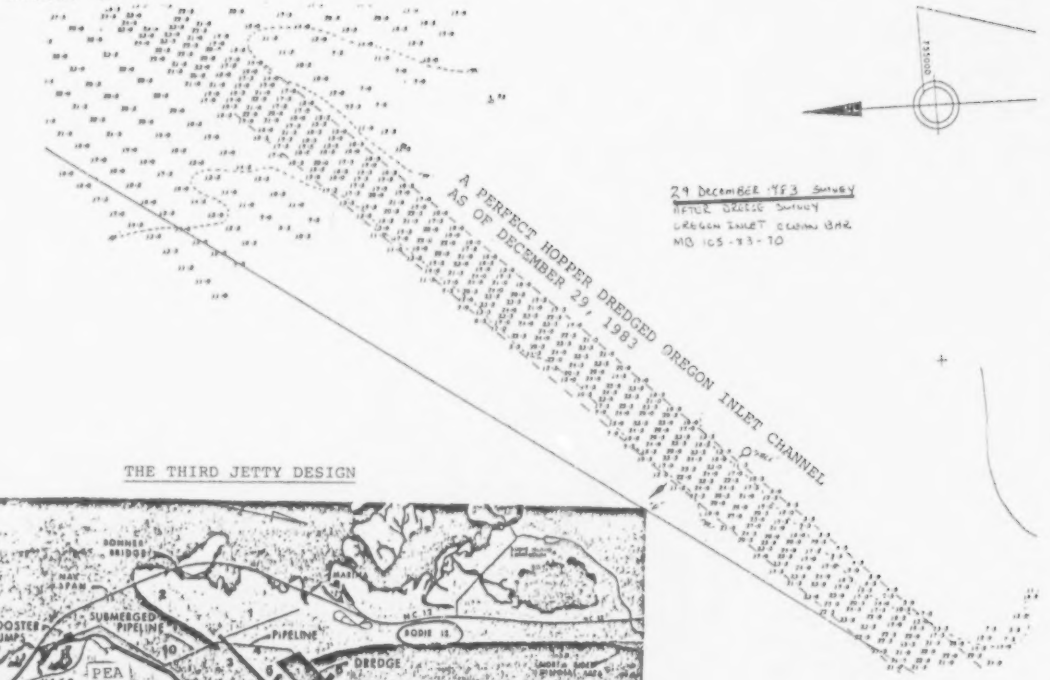
*Surf fishing.*—"It is estimated that 80,000 to 100,000 annual visitor days are associated with this activity. During the 3 year construction period access to the fishing areas by the public will be severely, if not totally restricted."

*Beach Use.*—"Oregon Inlet Beach . . . supervised swimming ½ mile from construction site. Use of beach reduced at least 50 percent."

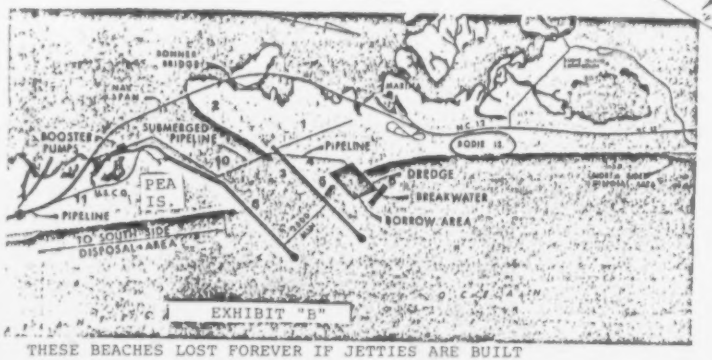
*Oregon Inlet Campground.*—"Located about 500 feet from shore anchorage system . . . annual visitation 60,000 to 75,000 camper days . . . During construction heavy equipment will create noise, dust . . . will detract . . . Estimated camper days reduced 50 percent."

*Oregon Inlet Fishing Center.*—"Estimated 30 to 40 percent of these boaters have minimum boating experience. Safety hazard to these boats will increase in direct proportion to the number and size of vessels used in the construction operation."

EXHIBIT "A"


A PERFECT HOPPER DREDGED OREGON INLET CHANNEL
AS OF DECEMBER 29, 1983
29 DECEMBER 1983 SURVEY
NETTLE CREEK SURVEY
OREGON INLET CHANNEL BAR
MB 105-83-70

THE THIRD JETTY DESIGN




THESE BEACHES LOST FOREVER IF JETTIES ARE BUILT

OFFICERS

President
ROBERT SHEETS
P.O. Box 2014
Kill Devil Hills, N.C. 27948

Vice President
RUSSELL PRIVETT
Salvo, N.C. 27972

Secretary-Treasurer
CLAIRE D. BULLINGTON
P.O. Box 626
Kill Devil Hills, N.C. 27948

NORTH CAROLINA
BEACH BUGGY ASSOCIATION, INC.

Box 968, Nags Head, N.C. 27959

AFFILIATIONS

North Carolina Wildlife Federation, Inc.
United Motor Sportsfishermen, Inc.
National Coalition for Marine Conservation, Inc.
Member International Game Fish Association, Inc.

DIRECTORS

RAY COUCH
Box 131
Buxton, N.C. 27920

WILLIAM R. HALVORSEN
1332 Gabriel Dr.
Fairfax, Va. 22032

JOSEPH A. MALAT, II
Box 723
Nags Head, N.C. 27959

JAMES E. "JACK" MOOR
Route 1, Box 832
Kill Devil Hills, N.C. 27948

JOHN P. NEWBOLD
201 Oakregate Turn
Virginia Beach, Va. 23462

GEORGE C. OTEMS
Box 757
Kill Devil Hills, N.C. 27948

3497

1-6

~~January 30~~, 1984

Rep. James J. Howard, Chairman
Committee on Public Works and Transportaton
2165 Rayburn House Office Building
Washington, DC 20515

Rep. Robert A. Roe, Chairman
Subcommittee on Water Resources
Committee on Public Works and Transportation
B376 Rayburn House Office Building
Washington, DC 20515

Dear Congressmen Howard and Roe:

The NCBBA composed of 1,500 mobile sportfishermen is opposed to the "Rider" attached to HR-3082 (Wetlands Resources Act of 1983, which has no relation to the jetty project).

The construction of jetties at Oregon Inlet would cause the loss of irreplaceable beach that our members use for surf fishing and other recreational purposes.

Scientists are unanimous that jetties at Oregon Inlet would cause erosion that would ruin beaches for miles on each side of Oregon Inlet. They also feel that allowing jetties to be built would violate the spirit of the Coastal Barrier Resources Act of 1982, and NCBBA agrees with their thinking on this matter.

The Park and Wildlife lands when used for construction, and the actual jetties, would bring about the loss of the entire South beach of Bodie Island (Park land) and additional beach on Pea Island (Refuge land).

The Corps own 1979 final supplement to the final Environmental Impact Statement estimated that "80,000 to 100,000 annual visitor days were associated with surf fishing on the south and north beaches and that annual visitors to the campground ranged from 60,000 to 75,000 camper days." Since 1979, the use of these beaches by the public has greatly increase

The Benefit/Cost ratio shows a very poor investment of taxpayers' monies - 0.34 to 1. Why spend $600,000,000 of taxpayers' monies on a very questionable project when the Federal deficit is already over 1 trillion dollars?

The Inman Study states that the jetties will accelerate already high erosion rates. Why gamble with the environment of the Outer Banks by building jetties?

We would like to urge both of you to oppose the "Rider" now attached to HR-3028, and convey to the Committee our opposition to the jetties and transfer of lands from the Department of the Interior to the U.S. Corps of Engineers.

Sincerely,

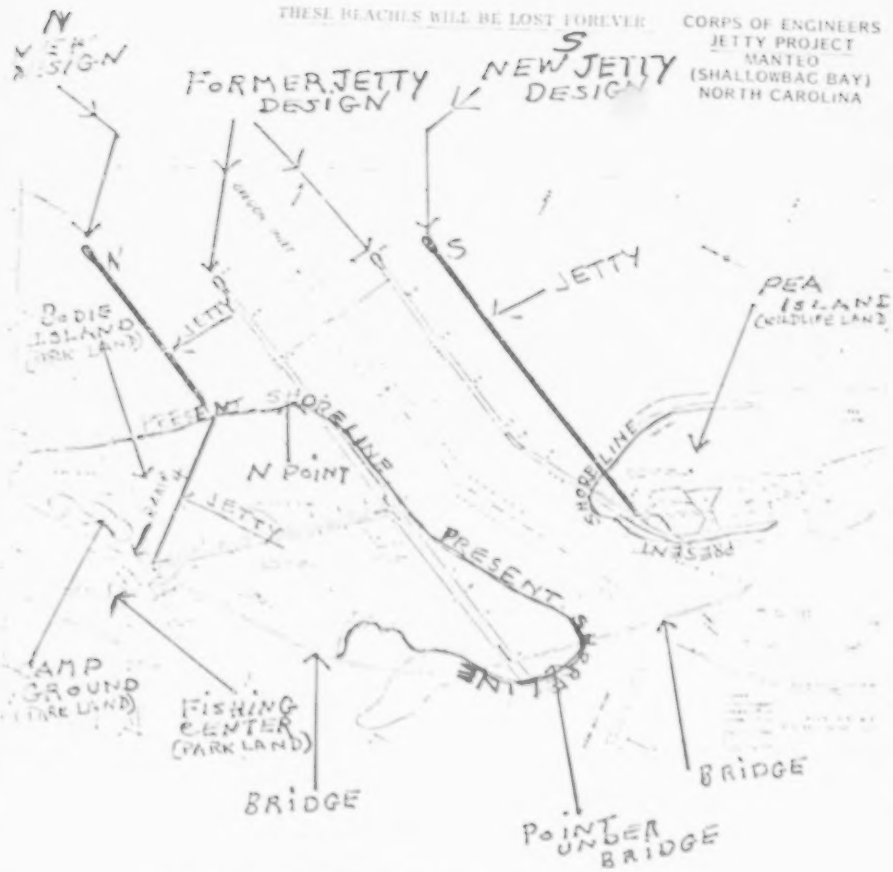
Robert Sheets
President

George C. Deems
Immediate Past President

P.S. We are attaching:
1) Design of Jetties
2) COMMENT, "Castles in the Sand" by N.C. Wildlife Federation
3) Survey ~~before Dec. 29, 1983~~ Dec. 29, 1983

P-P.S. We believe that a safe and adequate channel can be obtained by hopper dredging at a fraction of the cost of mile-long jetties. In fact, this channel has now been obtained by the hopper dredge Mermentau...see December 29, 1983 survey attached - the best channel in 20 years.

We respectfully request that this letter & the attachments be included in the record of the hearing held Feb. 7, 1984, as the position of the NCBBA




THE ABOVE JETTY CONSTRUCTION PLAN LAYOUT BY THE ARMY CORPS OF ENGINEERS CLEARLY SHOWS THAT THE BEACHES AT OREGON INLET WILL BE LOST FOREVER IF THE JETTIES ARE CONSTRUCTED.

THE NORTH JETTY GOES RIGHT BESIDE RAMP 4 AND THE CAMPGROUND. AFTER ANCHORAGE FOR THE JETTIES IS ADDED AND BEACH DISPOSAL AREAS ARE USED, THE ENTIRE NORTH BEACH OF BODIE ISLAND WILL BE LOST FOREVER FOR RECREATIONAL PURPOSES BY BOTH PRESENT AND FUTURE GENERATIONS.

COMMENT

# *Castles in the Sand*

Remember how devastated you were the first time as a child you had worked very hard to build a sand castle on the beach only to have a wave from the incoming tide knock it down and wash it away? Well, Senators Helms and East, Congressman Walter Jones, Governor Hunt, the Army Corps of Engineers, the governing officials of Dare County and a group of commercial fishermen are pressing the Federal Government to build a $600 million sand castle at Oregon Inlet in the form of two mile-long jetties. But while their sand castle is not actually made of sand, it has about as much chance of doing what they want it to do as your sand castle had of housing the Royal Family.

Elsewhere in this issue is an all too brief explanation of the controversy surrounding the drive to construct the jetties. The crux of the matter is that the proponents of the jetties say the jetties are the only means of achieving a permanent, stable navigation channel through the inlet. And, they say, a permanent, stable channel is the only way the small fleet of commercial fishing vessels and the attendant industry in and around the Roanoke Island town of Wanchese can survive.

Barrier island dynamics is a very complex and not fully understood science. One thing that is, or should be, understood is that man has wasted billions upon billions of dollars in his remarkably unsuccessful attempt to influence those dynamics. On the ocean floor or buried under sand are billions of dollars worth of monuments to man's inability to influence nature's course on barrier islands. Any first-year geology student knows that the very nature of barrier islands is their instability. Just ask anybody who has lost a house or a motel to a hurricane just how permanent a structure you can build on a barrier beach.

Oregon Inlet may well be the most dynamic barrier island inlet in the world. It is almost certainly the most prime example in the United States. There is not an existing jetty project in the country to suggest that jetties of any design will have the slightest chance of assuring a permanent channel through Oregon Inlet. To spend $600 million, or $300 million or even $100 on something that virtually no scientific authority gives a chance of working is a mammoth waste of tax money. The shame of that waste is compounded by the fact that the much less expensive and likely more effective means, an adequate dredging program using up-to-date equipment, has not even been tried.

The scientific community is virtually unanimous in its opposition to jetty construction from economic, environmental and practical points of view. Jetty construction is likely to cause accelerated and permanent erosion to the Cape Hatteras National Seashore and the Pea Island National Wildlife Refuge, the beaches of which border the inlet. The cumulative effects of that erosion would severely damage or destroy large parts of both. That damage will result in the loss of important wildlife habitat, unique recreational areas and cherished natural areas which cannot be replaced. The attendant economic loss to the tourism-related industry would be tremendous. The loss of this part of our natural heritage will deny enjoyment of that heritage to hundreds of thousands and their children while providing questionable benefits to few.

We agree with nearly everyone that an adequate channel through Oregon Inlet needs to be maintained. A conscientious dredging program will provide an adequate channel with greatly reduced environmental damage and at about one fourth the cost of jetties over 50 years. Even with jetty construction, dredging will eventually be necessary. The amount which will have to be spent *after* the jetties are built would probably pay for an adequate dredging program *instead of* jetty construction.

The drive to build jetties at Oregon Inlet has been marked from the outset by conflicting, incomplete and just plain wrong information, poor and incomplete planning, improbable assumptions, questionable economic analyses and emotional rationalization. Any rational, logical, detached analysis of the evidence can lead to no other conclusion than that the jetties would be a huge waste of money, an environmental disaster and a denial of the public's right to use and enjoy the surrounding beaches. We hope the Congress will understand that this is clearly not in the public interest and will bury this very bad idea.

Article from Friend O'Wildlife, Vol. 30, No. 4, September/October 1983

by N.C.W.F

National Coalition for Marine Conservation, Inc.

P.O. Box [illegible]
SAVANNAH, [illegible]
Phone [illegible]

October 3, 1983

The Honorable John F. Seiberling, Chairman
Public Lands and National Parks Subcommittee
U.S. House of Representatives
Washington, D.C. 20515

Dear Cong. Seiberling,

I am writing to you and the other members of the Public Lands and National Parks Subcommittee on behalf of the National Coalition for Marine Conservation (NCMC). The NCMC is a private, non-profit organization with thousands of members nationwide devoted to the wise use of marine resources and the protection of the marine environment. We strongly object to an amendment to H.R. 1092, the "[illegible] Wetlands Resources Act of 1983", which would authorize the U.S. Army Corps of Engineers to utilize National Park Service lands to construct jetties at Oregon Inlet, North Carolina.

The NCMC has joined with numerous other conservation [illegible] sport fishing groups and respected marine scientists in opposing the construction of jetties to stabilize the channel at Oregon Inlet. We regard this project as both environmentally unsound and financially wasteful and this view has been supported by the Congress, which has consistently voted against funding, and by the Department of the Interior, which has refused the use of park lands adjacent to the inlet.

Attaching a bill to facilitate this controversial project to H.R. 1092 is a flagrant attempt to circumvent the will of the Congress, the Congress and the Department of the Interior. The fact that H.R. 1092, a wetlands protection bill, is legislation that has the overwhelming support of the environmental community and the [illegible] is particularly galling.

We believe that the facts about Oregon Inlet make a compelling case against jetty construction. The jetties will cost at least $40 million to build and another half a billion dollars to maintain over the next 50 years. With that huge expenditure of public funds, there is still no certainty that the channel will be stabilized -- in fact, past experience with jetties on barrier islands and beaches would say the opposite -- but the scientific evidence does indicate that the surrounding park lands, which are used annually by many thousands of surf fishermen and other recreationists, will be seriously eroded because of the jetties. We agree with other opponents of the jetties that regular dredging of the channel is a more cost-efficient and equally effective way of keeping the channel open, without aggravating erosion at the inlet and causing additional problems.

We therefor urge you and the Subcommittee to remove the Oregon Inlet amendment from the wetlands protection bill, H.R. 1092, so that the jetty construction can be considered on its own merits. The expense of taxpayers money and the potential damage to the coastal environment is too great to allow this ill-conceived project to slip through a legislative loophole. It will serve no one but those special interests who favor the jetty construction at whatever cost and without a fair debate of the issue.

Thank you for your fullest consideration.

Sincerely,

Ken Hinman
Executive Director

---

OFFICERS

[illegible]

AFFILIATIONS

[illegible]

**NORTH CAROLINA**
**BEACH BUGGY ASSOCIATION, INC.**

Box 968, Nags Head, N.C. 27959

DIRECTORS

[illegible]

September 29, 1983

Hon. John F. Seiberling, Chairman
Subcommittee - Public Lands & National Parks
Interior & Insular Affairs Committee
U.S. House of Representatives
Washington, DC 20515

Dear Members:

The North Carolina Beach Buggy Association opposes HR3288 that would authorize the Army Corps of Engineers to utilize lands under the jurisdiction of the Department of Interior (Cape Hatteras National Seashore and Pea Island) to carry out construction of jetties at Oregon Inlet (Manteo (Shallowbag)Bay), N.C. We oppose the construction of jetties for the following reasons:

(1) The Park and Wildlife lands when used for construction, and the actual jetties, would bring about the loss of the entire south beach of Bodie Island (Park land) and additional beach on Pea Island (Refuge land).

The Corps' own 1979 final supplement to the Final Environmental Impact Statement estimated that "80,000 to 100,000 annual visitor days were associated with surf fishing on the south and north beaches and that annual visitors to the campground ranged from 60,000 to 75,000 camper days." Since 1979, the use of these beaches by the public has greatly increased.

For many years, thousands of citizens, young and old, have used these beaches for recreational purposes (surf fishing, camping, picnicking, crabbing, hiking, walking, birdwatching, etc.). We believe present and future generations should continue to do so. (See map attached).

(2) The Inman Study states that jetties will accelerate already high erosion rates.

(3) The Benefit/Cost ratio shows a very poor investment of taxpayers' monies.

We believe a safe and adequate channel can be obtained by hopper dredging - thus saving taxpayers millions of dollars.

Why gamble with the environment of the Outer Banks by building jetties when the Federal deficit is 1.3 trillion dollars - why spend money on a very questionable project?

Now, we understand that the Oregon Inlet provision of HR3288 has been added to HR 3082 (Wet Lands Protection) as an amendment. We urge the committee to remove the Oregon Inlet, NC, provision from HR3082 and deal with the Oregon Inlet provision on its own merit.

The North Carolina Beach Buggy Association firmly believes that the Oregon Inlet jetties are in direct conflict with the Corps of Engineers' 1977 Final Environmental Statement (See attachments).

As previously stated, the NCBBA is vigorously opposed to HR3288, and firmly believes that the amendment to HR3082 is an attempt to keep from facing up to the strong opposition in North Carolina and other states by many organizations and citizens against jetty construction.

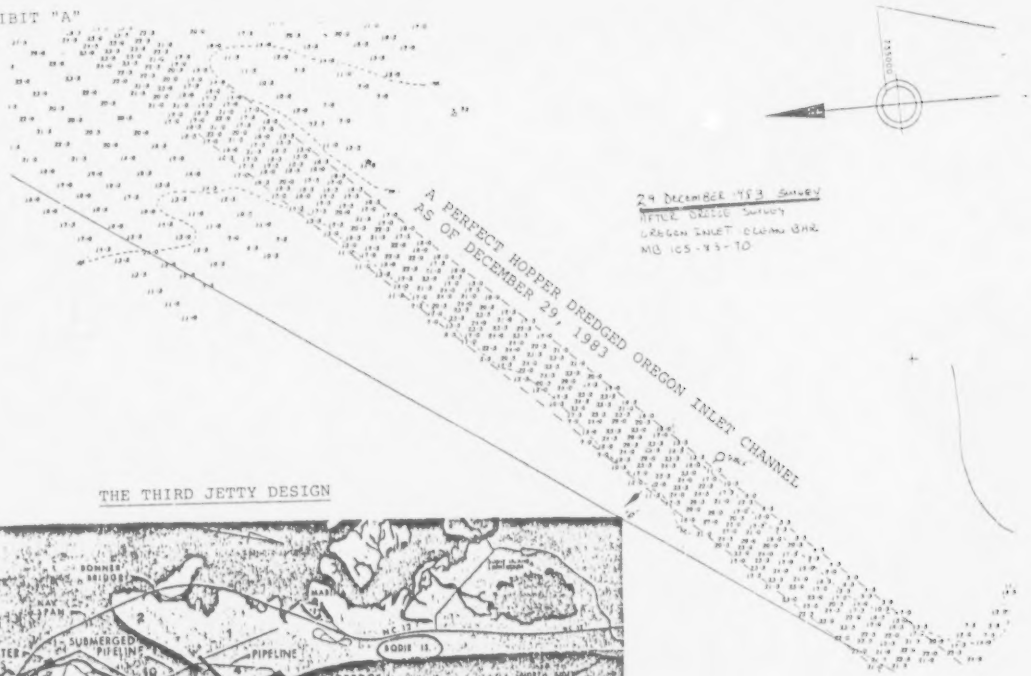
We suggest the committee consider HR3288 on its own merit, and not allow it to ride along on another bill that has no direct relation to the jetty project (see attachment).

Yours very truly

Robert Sheets, President
NCBBA

George C. Deems
Immediate Past President
NCBBA

EXHIBIT "A"


29 DECEMBER 1983 SURVEY
RUDEE DRAGGED SURVEY
OREGON INLET CHANNEL
MB 105-83-TO
A PERFECT HOPPER DREDGED OREGON INLET CHANNEL
AS OF DECEMBER 29, 1983

THE THIRD JETTY DESIGN

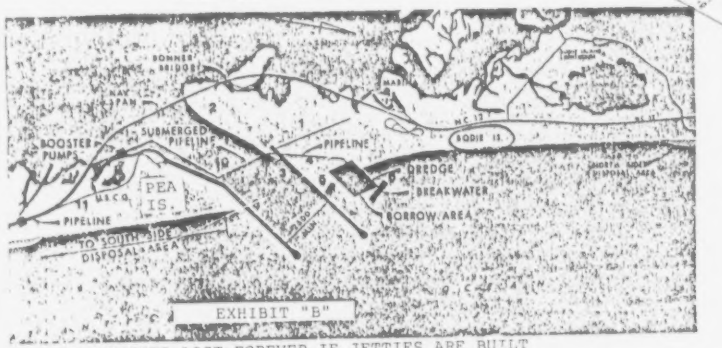



EXHIBIT "B"

THESE BEACHES LOST FOREVER IF JETTIES ARE BUILT

## Testimony on H.R. 3082 As It Relates to the Manteo (Shallowbag) Bay Project

My name is Melvin R. Daniels, Jr., and I am a member of North Carolina's First Senatorial District, which includes the Oregon Inlet area itself and the primary region of the state whose boats use Oregon Inlet for ocean access. I am also chairman of the South Atlantic Fisheries Management Council, having been a member of the Council for more than five years.

In 1976, Congress passed Public Law 94-265, the Fishery Conservation and Management Act. This act extended the United States jurisdiction over fisheries out to 200 miles and created a new form of regional government throughout eight regional fishery management councils. I am concerned that in keeping with the seven national standards for fisheries management that the fishermen of the northern coast of North Carolina are being discriminated against under standard No. 4. Standard No. 4 states conservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate fishing privileges among United States fishermen, such allocations shall be fair and equitable to all fishermen. They must be carried out in such a manner that no particular individual, corporation or entity acquires an excessive share of such privileges.

My interpretation of national standard #4 is based on the fact that no longer can our fishermen of the Oregon Inlet area compete in an equal manner due to the fact that their vessels are unable to transit the shallow waters of Oregon Inlet. They cannot compete with other nations or with other domestic vessels using smaller vessels themselves, which will not allow them to bring adequate catches to local harbors.

It is proven now from economic and feasibility studies that only the larger vessels can compete in an ever-growing competitive seafood industry. Our fishermen are now competing not only with our own American fishermen but with those of Spain, Portugal, Japan, Canada, Brazil and many of the Iron Curtain nations for the fishery resource.

Economics have shown the larger vessels have an economic advantage of from 2 to 1 to 3.8 to 1 over smaller vessels who must come in more often to unload their cargo.

The ratios that economists use to justify larger catches are based on the fact that more ice is used, more boatbuilding takes place, there are larger sales of fuel, general supplies, storage, electronic services, groceries and other costs to the crew. All of this adds up to more employment and a larger multiplier for economic benefits.

The cost per unit has gone up and in many cases, the landings have gone down. The only way that the fishermen can justify their existence is with larger vessels and more tonnage. Under present conditions, this cannot be achieved at Oregon Inlet and the fishermen are facing severe discrimination.

We hear a great deal of discussion about whether the project will be ecologically and environmentally damaging to the area. The concept of jetties is as old as time. Recorded history shows the Phonecians and the ancient seamen of the Mediterranean area were using jetties to protect their harbor entrances. As a professional pilot for 40 years, I have flown from the ice slopes of Iceland to the lower tip of Argentina. There are jetties all over the Atlantic Seaboard. Many parts of South America have topography and geography similar to Oregon Inlet. Jetties are an acceptable norm and have proven to have no ill effect on the ecology.

I respectfully suggest that those who are advocating harm to the environment by jetties are speaking for selfish interests who are pleased to see our fish sell in ports that are more favorable to their interests. The others who speak against the inlet and contend the ecology will be adversely affected are all from the world of academia and are speaking only from theory and without fact. From the beginning of our coastal, ecological and environmental time of protection, we have looked to the U.S. Army Corps of Engineers as the number one authority in this area. They do not speak from theory but from proven scientific data. I respectfully suggest that we listen to the voice of proven knowledge and not that of theorists.

In conclusion, let me make my third and most important point: people, their livelihoods and their safety. When we look at the loss of lives and the many millions of dollars of equipment, the very nature of the stabilization of Oregon Inlet is a must. As a port of refuge for not only North Carolina's fishermen but for fishermen from many ports of the nation in time of storm, Wanchese is vital and accessible only through Oregon Inlet. There is no other port these fishermen can reach within a short time; they cannot s[illegible]m to the Chesapeake Bay to the north or to Morehead City to the south.

They need Oregon Inlet and I respectfully request your favorable consideration on HR 3082 which will provide them the reliable sea access as promised by the Congress in 1970 when the Manteo (Shallowbag) Bay Project was authorized.

## STATEMENT OF KEN HUNTER

Title IV. of H.R. 3082 offers the Subcommittee on Water Resources a handy, if unwanted, opportunity to draw a clear line between the standards applied to its present project objectives and the less rigorous standards that sometimes seemed to be applied to projects authorized in the past.

When the jetties at Oregon Inlet were authorized in 1970, probably few questioned their wisdom and no doubt it was generally assumed to be a worthwhile project. Since then scientists have learned much --very much-- about barrier islands and the havoc jetties and groins can cause to them.

Jetties at Oregon Inlet would be profoundly unwise. They would induce drastic erosion to miles of public beaches at Cape Hatteras National Seashore and Pea Island National Wildlife Refuge. That was not very clear in 1970, but it is clear --very clear-- today.

Something else also is becoming abundantly clear about the Manteo (Shallowbag) Bay Project: Its $600,000,000 jetties never will come close to paying for themselves --not even over the project's 50-year life. The old economic justification was scrapped in 1982 because of "a fundamental error," as Assistant Secretary Gianelli expressed it in a letter to Senator East.

A promised new economic analysis now is almost a year overdue. There is no economic analysis on the table! So we are not arguing about the bona fides of benefits claimed, nor whether costs have been fully accounted for.

Yet Title IV. seeks to breathe fresh life into a discredited authorization. There hasn't been an economic leg to stand on since the summer of 1982, and, by forcing the issue, Representative Jones has put this subcommittee in an untenable situation.

Initially the Public Works and Transportation Committee had joint jurisdiction with two other committees over Title IV.'s predecessor, H.R. 3288, which Representative Jones introduced in June 1983. But when it was attached by the Merchant Marine and Fisheries Committee to H.R. 3082, the sequential referral imposed a deadline for your action.

The question is: Do you kill it?.....Or do you try to resuscitate it?

Put another way: Do you distinguish the Oregon Inlet jetties from the new (and presumably worthy) projects you now are introducing into the public works pipeline by the omnibus water projects authorization bill?.....Or do you extend your blessing to the jetties and thereby suggest some projects in the omnibus bill are of similar inferior quality?

This subcommittee has put in long, painstaking hours in preparing the omnibus bill. There is a wide perception that you exercised diligence in separating chaff from wheat. It is both commendable and noteworthy that the omnibus bill makes no provision to override the Department of the Interior's objections to the proposed jetties at Hatteras Seashore and Pea Island Refuge.....and any such amendment should be resisted as the omnibus bill goes through referrals and on to the Floor.

The Manteo (Shallowbag) Bay Project stands stripped of economic justification and lashed by overwhelming scientific opinion. On either count, it should be eliminated from the competition for appropriations.

The jetties are opposed by environmental organizations, the National Taxpayers Union and such recreational groups as the North Carolina Beach Buggy Association and the United Mobile Sportsfishermen. To the best of my knowledge, there is not a single North Carolina newspaper outside the First Congressional District which has endorsed the jetties. But <u>each</u> of the following major newspapers has published <u>several</u> editorials against the jetties this year: The Raleigh News and Observer, The Winston-Salem Journal, The Fayetteville Observer and The Greensboro Daily News.

North Carolina's fabled Outer Banks with its wonderful public beaches is the last place the Army Corps of Engineers should try to tame a highly dynamic barrier island system. Understandably, you might have preferred to avoid it, but now that the issue has been put squarely to you by the sequential referral, we urge you to vote disapproval of the H.R. 3082 rider.

A fresh endorsement by the Public Works and Transportation Committee would advance an unworthy project. By association, it would tarnish the lustre of the projects in the omnibus bill.

We appreciate that it cannot be pleasant for the leadership of this committee to find it necessary to inform Representative Jones, a committee chairman, that you cannot see your way clear to assist him in this instance. Nevertheless, the nettle should be grasped. By doing so, you would do the right thing. And you also would reaffirm and demonstrate your commitment to new and higher standards for those water projects you have recently determined should be built.

The proposal to build jetties at Oregon Inlet does not hold up well under close examination. Better, then, to cast a skeptical eye now than after the beaches begin to erode and the American Taxpayer has been locked-into a $600,000,000 commitment.

A sea of miscalculation, misperception, misassumption and misrepresentation swirls about these jetties, and the following pages cite ten examples. I would welcome the opportunity to discuss any of these.

But first I would urge the subcommittee to make particular note of the Final Environmental Statement for the Wanchese Harbor Development Project (March 1977) wherein, on page 55, the Corps of Engineers reports:

> "...the State of North Carolina has made the determination that development of Wanchese Harbor is economically viable <u>without</u> stabilization of Oregon Inlet."

The Corps of Engineers also said on page 55:

> "...the harbor and associated facilities will <u>not</u> be used to justify stabilization of Oregon Inlet."

State and Corps have been doing precisely this ever since.

I. The Corps of Engineers long contended 70 percent of the project benefits would be derived from the flourishing of a "nontraditional" fish processing enterprise at Wanchese Seafood Industrial Park.

That claim --the "squid scenario"-- collapsed. In September 1982, Assistant Secretary Gianelli confirmed my investigation had documented "a fundamental error" in the Corps' data. It was in the central piece of data. And it was virtually total: Foreign fleets did NOT catch 350,000,000 pounds of fish in 1976 anywhere near Oregon Inlet.

Official records show the foreign fleets essentially avoided the area. Their catch within the sector of the ocean offshore North Carolina (and up to a line extending out from the mouth of Chesapeake Bay) totaled only 7 to 9 million pounds!

And throughout the whole 160-mile radius outside Oregon Inlet (which the Corps had stipulated to be the range of commercial feasibility), it is inconceivable that the foreigners could have caught more than 20,000,000 pounds of "nontraditional" fish --squid, hake, sea herring, mackerel, butterfish.

The 330,000,000-pound error utterly invalidated the primary economic justification for the jetties. No way will private enterprise invest anything in the kind of specialized processing plants and oversized trawlers the Corps had envision in its "squid scenario." No way will Wanchese become the "Squid Capital of the Atlantic Seaboard."

The benefit/cost ratio sank to 0.34 to 1.0 on this count alone.

A 0.34 to 1.0 BCR is not the kind of thing American taxpayers expect Congress to nod approval to. But that's the score on the project that Title IV. of H.R. 3082 seeks to advance.

With a 50-year life cost estimate of $600,000,000, the Corps found itself stuck in a $400,000,000 hole. And there's decreasing prospect for its chances of climbing out of it.

II. The Corps once said its new economic analysis would be ready by the end of March 1983. In May 1983, the Wilmington District confidently assured Senator Mathias that the new analysis would be positive, but it wasn't quite ready. Now in February 1984, it is still unavailable.

On January 27, 1984, a Corps spokesman confirmed to a House Interior subcommittee that the Washington office has had to return "several iterations" to the Wilmington District. Members of this subcommittee might well ask how much longer the Washington office proposes to allow the Wilmington, N.C. District to fiddle with this. It is almost a year overdue!

Better yet, the Public Works and Transportation Committee should draw the most logical inference: A bona fide economic justification can no longer be anticipated. Without an economic justification, Title IV, should be killed. And even if a paper justification might pop suddenly onto the table at the Eleventh Hour, I hope --and urge-- that this committee deal with it with the skepticism it deserves.

III. A year ago, the Corps was telling members of the North Carolina press corps and a reporter for National Public Radio that they had managed to cut back projected 50-year life costs to about $350,000,000. That didn't last. At the recent House subcommittee hearing, the Corps' estimates once again tallied $600,000,000.

IV. A year ago --January 1983-- a Corps delegation from Wilmington went up to Wanchese to quell the fishermen's demands that they contract for a hopper dredge. Local press reports quoted the Corps' delegation --which included Mr. Vallianos-- as saying:

A hopper dredge could not work in Oregon Inlet because

a) it required 14.6-foot depths when empty;
b) it would slam into the bottom and break up; and
c) etc.

The Wilmington District apparently made no complaint about being misquoted or misinterpreted when the newspaper reports came out and made it clear that reporters and fishermen alike had understood the Corps to say a hopper absolutely could not work in Oregon Inlet.

Eight months later the Corps contracted for a hopper --the T. L. James & Company's Mermentau. It went to work in Oregon Inlet in September. The Mermentau, as it had elsewhere, demonstrated once again that it does not require 14.6-foot depths while empty. The Mermentau did not slam onto the bottom and break up. In fact, at a cost of $1.7 million, the Mermentau established a brand new channel through Oregon Inlet. It may be the best channel they have ever had there. The winter fishing season got off to a fine start.

V. The channel had depths of 20 or more feet virtually throughout the stretch profiled when the hopper dredge Mermentau left just before New Years. Mr. Vallianos told the House subcommittee the Corps did not anticipate any significant impact from erosion to the beach that might be induced by the hopper's September-December dredging. Yet the Corps has often insisted that intensive hopper dredging would cause "catastrophic" erosion to Pea Island's beaches.

This claim is based on a "Dredging Feasibility" Study. The Corps talked widely about it early last year and the North Carolina press uniformly understood the Corps to be saying dredging could not do the job at Oregon Inlet. What the Corps consistently neglected to explain --and the press never picked up on it-- was that the Dredging Feasibility Study focused exclusively on maintaining a 20-foot deep channel (by 400 feet) at all times. That's the jetty channel authorization.

It is the 20-foot deep channel that the Corps says would cost $14 million annually to maintain (in contrast to the $12 million annually of the $600,000,000 jetty project). And it is the 20-foot deep channel that supposedly would induce "catastrophic" erosion along Pea Island.

Note: The Report for the 1983 Senate Energy and Water Development Appropriation Bill specifically directs the Corps "to evaluate and determine the feasibility and sufficiency of performing maintenance dredging to accomplish a reasonably consistent and reliable 14-foot channel." This remains undone.

It was not done in the Dredging Feasibility Study. That document was printed a year ago, but it is still unreleased. The Corps apparently would rather tell people what it says than let them read for themselves.

I have read it, of course. And, even though it seemingly deliberately avoided dealing with the 14-foot channel, it does tend to confirm that there is a tremendous, exponential difference between the cost and effort of dredging and maintaining a 14-foot channel vs. a 20-foot channel.

Key data can be gleaned from a small table in the Study which indicates a 20-foot channel would supposedly trap 100% of the sand which might try to flow past it whereas a 14-foot channel would capture only 22% of the suspended, flowing sand in the littoral drift. (There's a typographical error in the Table. It says 27%, but it should be 22%.)

With 78% of the critical sand supply being able to pass by a 14-foot deep channel naturally, the threat of erosion from a more modest dredging objective is substantially reduced.

Further, the Corps is not particularly convincing when it insists, in the absence of using the modern hoppers' pump-out capability, that a hopper cannot place enough sand close enough to the beaches to reduce the threat of dredging-induced erosion further.

VI. An equally important reason why a 14-foot channel is of interest --and relevance-- is because there is abundant evidence that such a channel depth would give the area's commercial fishermen a serviceable channel.

The oversized squid trawlers that would service the seafood industrial park were the only reason ever cited (until recently) for needing a 20-foot channel depth. Since Wanchese is not going to become America's squid capital, we should anticipate something more modest might suffice. It would. The area's fishermen proved it. In 1979, 1980, 1981 and 1982.

The Corps once said the area's catch of "traditional" fish would not increase much. The Corps said the catch --"landings"-- in Dare County of "traditional" fish would average 22,500,000 pounds after the jetties were built.

But with NO jetties, the Dare County landing of "traditional" seafood significantly exceeded that post-jetty projection in four of the past five years:

| | | |
|---|---|---|
| 1979 | -- | 35 million pounds |
| 1980 | -- | 41 " " |
| 1981 | -- | 39 " " |
| 1982 | -- | 32.5 " " |

The '79-'82 performance record was made while Oregon Inlet only occasionally (if ever) met the objective of having a 14-foot channel during the prime winter fishing season. Could anything better prove that a "reasonably consistent and reliable 14-foot channel" would, indeed, be serviceable to the needs of the commercial fishermen?

Caveat: The above Dare County landings statistics for flounder, seatrout, croaker, bluefish and other ocean-caught species is mixed with shrimp, crab and oysters from the sounds inside the inlet. But so was the Corps' estimate of 22.5 million pounds, post-jetties. (I am advised the leap in catch statistics is primarily attributable to ocean-caught species. Also, the ocean fishery is active almost entirely in the winter months when channel conditions would usually be least favorable.)

VII. The Corps' spokesman, Mr. Vallianos, insisted to the House subcommittee on January 27 that the hopper dredge got "no production" from its work at Oregon Inlet between September 19 and November 17. Mr. Vallianos should tape the September 19 channel profile to a backlighted window, as I did, and then superimpose the November 17 channel profile over it to try to match-up the 14-foot contour lines.

The overlay shows there was greater width (and thus more depths of over 14 feet) on November 17. Granted it was not a period of greatest productivity in comparison to other periods during the contract, but it simply is not accurate to say there was "no production."

Note: The Outer Banks took a strong rap from Tropical Storm Dean during this period. In fairness, Mr. Vallianos should have mentioned that. Also, there really was a period of time with "no production" while the hopper was in Norfolk for repairs.

VIII. Mr. Vallianos told the House subcommittee the Corps estimates F.Y. '84 dredging costs will be $4.5 million. He left the implication that, in addition to the new costs of the hopper last fall, dredging costs were escalating sharply.

First, he did not make clear that the hopper was establishing a new channel. So perhaps return visits to reestablish it may not be so expensive.

Next, it is difficult to believe the Corps expects to run up costs of about $3 million for the side-casting dredges it has long used at Oregon Inlet. (Most, if not all, of the hopper's $1.7 million cost was attributable to First Quarter F.Y. '84.) This is why the representative of the National Taxpayers Union suggested in his testimony January 30 that Mr. Vallianos may have left something undisclosed about the Corps' dredging plans and its $4.5 million estimate. Perhaps, we think, the F.Y. '84 dredging estimate includes two sessions of the hopper dredge --in the First Quarter (preparing the new channel for this winter's fishing season) and in the Fourth Quarter (for next winter's season).

It has been generally understood that the hopper's contract was not called for bids and issued until the prime dredging season was almost over. Perhaps the Corps anticipates --as they should-- bringing in the hopper sometime next July or August. If so, that would contribute to the high $4.5 million estimated for dredging in F.Y. '84.

Even if dredging were to run at $4.5 million over 50 years, that would amount to $225,000,000, in contrast to the $12 million annual estimate for the jetties with their $600,000,000 50-year life cost.

IX. At the House subcommittee hearing Mr. Vallianos also reaffirmed his confidence that the sand bypassing system would work.

The General Design Memorandum of 1980 described sand bypassing as "essential" to the operation of the project and further described a floating breakwater as its "main component."

This GDM pronounced the Corps prepared to begin construction of the jetties. The floating break ater and sand bypassing system were to catch up with the rest of the project by way of "feature design memorandums."

Perhaps it is fortunate that construction of the jetties did not get underway in 1981, because these feature design memorandums are also still on the list of missing documents.

With the floating breakwater, the Corps exhibited a reckless disregard for the possibility of failure. To go ahead without having it ready would have been irresponsible, considering the national importance of the beaches that would have been jeopardized. Here's what the Corps said it didn't know about the floating breakwater idea in 1980:

Structural Integrity
Motion Characteristics
Mooring Systems
Wave Suppression Efficiency

What else would anybody need to know about a floating breakwater, the "main component" of an "essential" system?

Yet in 1980 they disclosed the need to do simulation model tests, physical model tests as well as field tests. Today, I gather from Dr. Orrin Pilkey who visited the Corps' Coastal Engineering Research Center in Mississippi last month, they are still fooling around with floating breakwater concepts and the progress and outcome of the experiments is still uncertain.

The list goes on and on.

X. The National Park Service empaneled a group of scientists, headed by Dr. Douglas Inman of Scripps Institution of Oceanography, the acknowledged father of modern coastal geology. The Inman Group twice sought to evaluate the Corps' plans and the data and work that went into them.

Sometimes the Corps stonewalled. At other times, it acted like a giant marshmellow. It was both outrageous and unhelpful.

The unprofessional treatment the Inman Group received sparked a sharp rebuke both from the panel itself and from the North Carolina Academy of Science which adopted a resolution censuring the Corps' behavior.

The Inman Group's reports can be found beginning on page 90 of the House Merchant Marine and Fisheries Committee's Hearing Record --Serial No. 98-21.

The Committee's Record contains not only the Inman Group's two reports, but also several other items of interest, including the Department of the Interior's formal determination that the jetties would be incompatible with Interior's responsibilities toward Pea Island National Wildlife Refuge (page 45), the Fish and Wildlife Service's economist's draft analysis of the Economics of Oregon Inlet (page 105), and a research paper by Daniel F. Gourash entitled, appropriately, "The Manteo (Shallowbag) Bay Project -- A Monument to the Gods of Engineering," (page 219).

If the Corps of Engineers ever does build its "monument," it will rest not only above the unstable muds the geologists told them they would find below the sands of Oregon Inlet, but it will also stand --an ugly eyesore on America's classic barrier island system, the Outer Banks-- at the end of a trail of misrepresentations that stretches from Capitol Hill to Raleigh to Wanchese.

TESTIMONY ON HR 3082 AS REGARDS THE MANTEO (SHALLOWBAG) PROJECT

UNITES STATES HOUSE OF REPRESENTATIVES

COMMITTEE ON PUBLIC WORKS AND TRANSPORTATION

SUBCOMMITTEE ON WATER RESOURCES

February 7, 1984

Harry Brinkley Schiffman

Marina - Tugboat and Charter
Boat Operator. Member of the
Dare County Oregon Inlet
Commission.

Oregon Inlet, North Carolina is a treacherous and ever-changing passage to the Atlantic Ocean through North Carolina's Outer Banks, and adjacent to several large sounds and numerous tributaries. Historically renown as: the home of the Lost Colony, the first attempted English settlement in the new world; the stamping grounds of Edward Teach, better known as the pirate, Blackbeard; the birthplace of aviation via man's first propelled flight by the Wright Brothers; its extremely fertile fishing grounds (sport and commercial); and miles and miles of beautiful sandy beaches. Of the foregoing, most are known from afar. However, to date, the most important aspect, the People of North Carolina's Outer Banks and their needs, have been unjustifiably ignored.

Years ago it was not uncommon for the people of the Outer Banks to give land to those who wished to build a homeplace and settle. By the late 1940's and early 1950's, the U. S. Government, through the National Park Service, was taking note of this fantastic recreational area as evidenced by their acquisition of lands against the will of many landowners of the Outer Banks, but in the purported public interest. This national park was suppose to be preserved in the interest of millions of visitors from all over the world and to be a big boost for local and state economies. As indicated in the attached copies of an article concerning beach preservation, (Ref. # 1) beach recreation is more popular and much less expensive than a combined total of numerous other popular recreational facilities such as tennis courts, golf courses, pools and gymnasiums. A large factor of beach recreation consists of the recreational boaters (small jon boats to large yachts), fishermen who charter headboat trips, or charter individual boat trips in groups of six or less, as well as surf fishermen and jetty fishermen. The latter represents the least expensive good fishing, in that jettys create a natural haven for fish, and do not require the expensive rigs of 4-wheel drives or boats. This would allow many more people the opportunity to fish who could not afford to do so by other means, as exemplified by the attached copy of a recent article in the Salt Water Sportsman, January, 1984. (Ref. # 2)

Presently people from all over the world venture to Oregon Inlet for a taste of the well known sportfishing, scuba diving and other recreational boating, and often are unable to go offshore due to the dangers of the Oregon Inlet passage. A potential commercial fishing fleet of over 200

ocean going trawl boats reached a recent new high in Wanchese the other day when approximately 30 boats successfully negotiated the channels to Wanchese. The U.S. Coast Guard Station at Oregon Inlet is no longer able to keep a boat in the 60 - 80 foot class on station for search and rescue, or its bouy tender due to the conditions at Oregon Inlet. In fact, as I noted just the other day, it appears that the station's small boats are now moored at Oregon Inlet Fishing Center, some additional five miles from the inlet, due to shoaling at the station. Numerous small boaters have discontinued operation in the area after having made some scary trips through Oregon Inlet. Suffice it to say, without objections from any viewpoint, that Oregon Inlet remains treacherous and continues to threaten the livelihoods of numerous businesses in northeastern coastal North Carolina, as well as the recreational avenue for millions of people from the world over who travel to this area to enjoy a portion of our nation's most popular leisure time and activities.

As a U.S. Coast Guard licensee for charter boats, owner-operator of a 60-foot commercial tugboat and a dry-stak and wet slip marina in Manteo, North Carolina, Vice President of the North Carolina Marinas Association, an appointee to the Oregon Inlet Commission, and a member of the Town of Manteo Board of Commissioners, and having family who go back to the founding of Dare County, North Carolina, I have some personal feelings and experiences pertinent to the Oregon Inlet situation which I wish to share with you. (Ref # 3)

As an operator of a charter boat, I know the feeling of returning from 50-60 miles offshore of Oregon Inlet only to find that the conditions have changed at the inlet, making it unsafe to transit the channel. Having departed at 5:00-5:30 a.m. and returned to the inlet at approximately 4:30-5:00 p.m., a major decision of responsibility concerning the safety of the eight (8) lives and a several hundred thousand dollar boat is at stake. Do you take a chance of carefully selecting the proper wave pattern and trying to catch it and stay with it, somewhat like a surfer, knowing that the channel may have changed and that any small amount of error or mechanical failure might spell disaster? Do you try to go 60 miles further to the South and shoot for Hatteras Inlet knowing that you will be marginal on fuel? Or, do you try to ride it out nose into the sea making little or no headway? I am here to tell you that all options have been tried, and none are very appetizing. The charter boat operator, as well as numerous recreational boaters from Vermont to Florida have to make these unnecessary decisions from time to time each season. Those remaining of the commercial

fleet who dare navigate Oregon Inlet are faced with these decisions constantly due to the more severe sea and weather conditions of the winter season. As indicated by the record, some never make it.

The failure of our U.S. Government to carry out its promises to jetty Oregon Inlet and maintain adjoining channels was quite evident in the case of the "Darana R" owned by Jimmy Ruhle of Wanchese, North Carolina, who grounded in Oregon Inlet in mid-winter, 1983. This was under rather calm sea conditions, but following a storm which apparently shifted the channel. After approximately 30 hours of attempts by the U.S. Coast Guard boats, the U.S. Army Corps of Engineers' dredge Schwitzer, and numerous fellow trawl boaters to free the "Darana R", I was contacted by an insurance company out of Norfolk, Virginia at 8:30 p.m. and asked to assist with our tug "Lookout". Although we had been refurbishing this boat for approximately one and one-half years, we were not really ready for such a call, nor did we have insurance coverage. Again, what to do? On the Outer Banks of North Carolina when someone is in trouble on the water, everyone who has anything to offer, will assist, even though they become exposed to great risks themselves. Our decision was made, and instead of waiting until the next morning for first light, as indicated to our client, we departed at 12:30 a.m. that night with Jimmy Ruhle's son as part of a makeshift crew to assist. Again, the failure of progress with the Oregon Inlet, Manteo (Shallowbag) Bay Project struck with another of its endless bag of tricks. Within an hour of departure from Manteo, the tug "Lookout" was aground in the channel which is part of this project, and try as she might for some eleven hours while listening to the Coast Guard and other boats ask where the hell is the tug, we were unable to proceed to assist the "Darana R".

Salty Dwag Marina is a dry-stak and wet slip marina located in Manteo, North Carolina, some eleven nautical miles from Oregon Inlet, and the only dry-stak between Virginia Beach, Virginia, some ninety miles to the north and Morehead City, North Carolina, located some 175 miles to the south. This type of facility is a packed house situation at all coastal areas where a safe inlet is within range. In fact, they all have waiting lists, and as in Morehead City, there are sometimes three or more such facilities in that condition. Two years ago, our six year old marina was at only one-third capacity and due to even more publicity about the dangers of Oregon Inlet and some more people actually experiencing the problems in person, our rental of spaces dropped some 45 percent this immediate past

season. We make it a point to ask owners whose boats are leaving our custody, about their reasons in order to hopefully improve our operations. And, I am often told of people and their families having the "hell" scared out of them at Oregon Inlet, thus causing them to seek safer boating areas. Obviously, these people pass the word, which further adds to the economic problems northeastern North Carolina is having to overcome such as 42 percent unemployment in Dare County during the winter of 1982-83.

As Vice President of the North Carolina Marinas Association, I have a direct link to boaters and marina operators in other parts of North Carolina, and in other areas throughout our nation. Oregon Inlet's fertile fishing grounds attract many adventurous boaters, and usually manages to send them home with a much better appreciation of life, if they are lucky. Amongst the recreational boating community, including boat builders, manufacturers, distributors and all marine related businesses from finance to insurance, oil companies, grocery stores, restaurants and motels, etc., all are astonished at the failure of the U.S. Department of Interior to do their part at Oregon Inlet. On the other hand, our government, which I still feel is the best anywhere, finds ways and means to send many times more dollars ($) to other areas of the world. How about the forgotten home folks???

Being a member of the Board of Commissioners of the Town of Manteo, where we are preparing to kick off a four (4) year celebration of the 400th anniversary of the "Lost Colony", and an appointee to the Dare County Oregon Inlet Commission, has allowed me to obtain a tremendous amount of information about the real potential economic impact that Oregon Inlet could have, if stabilized and maintained. The lack of a remedy to date pertains to businesses of all sizes, large and small, in all of northeastern North Carolina. In fact, if compared with the good effects it could have, plain ole country common sense will tell you that the costs of building and maintaining this project is small potatoes as related to the funds it could generate in our local, state and federal economy.

Having a great grandfather (Ref # 3) who was one of the founders of Dare County, and a great uncle who helped push off the Wright Brothers first powered flight from the sand dune at Kitty Hawk, is only a partial illustration of my personal family involvement in the Outer Banks of North Carolina. The National Park Service decided in 1952 to set up a very large area of the Outer Banks ocean front property, and others, for the enjoyment

and recreation of the general public. As the National Park Service indicated the boundaries from Bodie Island, just north of Oregon Inlet, to Ocracoke Island, they outlined their intent to protect and cooperate with the local peoples and communities in every way (Ref # 4). Some 70 miles or 30,000 acres of very prime ocean front property was then taken for this project at a bargain price of $1,236,000.00 (Ref # 5 & 6)

At the time of this fine deal for Uncle Sam, the people of Dare County, North Carolina and the world were promised beach access and protection from erosion along with government cooperation with local community needs and efforts effected by this park. In the mid-forties, local, regional and state interests began working on a stabilization process for Oregon Inlet. December 31, 1970, after six years of intense study, saw the authorization of the current project, which by all indicators led the people of Dare County and numerous other northeastern coastal counties, the State of North Carolina, and people from around the world to believe that Oregon Inlet would at last be stabilized and maintained. Thus, the people of our area from commercial fishermen to small shop keepers to marinas, to local governments, etc. made plans for the economic future development based on governmental promises and indicators. Larger trawl boats to compete in the National ocean fisheries, expanding businesses such as hardware stores, grocery stores, marinas, banks, and on, and on, and on, and on, geared up for this economic phenomena.

I am here to tell you in summary a portion of the feelings of these people. The need for this project is unquestionable, as evidenced by the more detailed information from testimony such as the U.S. Coast Guard as related to search and rescue, and safety, the State of North Carolina on local and state economics, individuals from the commercial fishing industry, Dare County officials, and the U.S. Corps of Engineers who have studied the project in more detail and spent more funds in doing so than any previous project of similar nature. The Corps simply and finally states that only via a dual jetty system and some annual maintenance, can Oregon Inlet be stabilized, and that a sand by-pass system must be incorporated in order to assure no adverse effects, rather to reduce some of the effects of accelerated erosion already in process.

How often does one have a coastal engineering research center within a a few miles of a proposed project (Ref # 7, 8, and 9). Plain ole common sense tells one that if you dig a hole that continually has lateral overwash, the hole tends to fill, depending upon the frequency and severity of the overwash. Just trying to dig and redig and watch conditions worsen lacks understandable logic. The simple economics of 200 trawl boaters or making 26 trips per winter season multiplied by an average of $10,000 per trip equals 52 million dollars of raw revenue from a winter season alone. This does not include associated business benefits of which there are many, nor does it include the potential benefits of recreational boating and associated business benefits, and all the other businesses that would prosper from the increased flow of people and revenues. Basic economics can easily justify the stabilization of Oregon Inlet without the necessity of more studies.

At the brink of disaster are livelihoods, including and surrounding commercial fishing, recreational boating, coastal search and rescue, national security and maritime patrol, the ecology of our estuarine system, and by no little means, the economy of the State of North Carolina. Oregon Inlet is the major artery to and from the sea for all of coastal northeastern North Carolina. During the last 30 years, shifting sands which accompany the natural movement of sand from north to south along the Outer Banks of North Carolina have constricted this navigable channel causing loss of life, livelihoods, and due to reduced flow of water, may be a large contributor to the ever increasing pollution of our rivers and sounds inside of the outer strand.

To be more specific, nine (9) lives have been lost at Oregon Inlet since 1969 as reported by the United States Coast Guard. Efforts to stabilize this passage began in 1946 with funds appropriated in 1960, and greater than $800,000 is spent annually in attempts to maintain navigable water depths in the inlet channel via dredging. It is my understanding that greater than six (6) million dollars has recently been spent in the never-ending task of dredging. On December 31, 1970, after six years of intense study, Congress authorized the current project in the River and Harbor Act of 1970. At this time the project was estimated to cost approximately $4.0 million in annual maintenance cost. During 1981, a seafood industrial park in Wanchese was completed at a cost of approximately $8 million.

The citizens of coastal North Carolina have been forced to once again turn to their Congressional representatives for help. Moved by a 42 percent unemployment in the winter and spring of 1983, the reduction of a commercial fishing fleet of some 200 boats to less than 20; the loss of potential revenues conservatively amounting to some $52 million from fishing payloads alone per year; the closure of our only metal shipbuilder, all four electronics firms and the first and only tenant of Seafood Industrial Park in Wanchese; immense damage already done and getting worse to the charter boat fleet and the recreational boating industry by the infamous reputation of Oregon Inlet; losses being incurred by the State of North Carolina by a nonactive seafood park costing some $8 million; a national wildlife refuge threatened by accelerated erosion; and the ill-effects being felt by every business in coastal North Carolina; Senator Helms and Senator East, Congressman Walter B. Jones and Governor James B. Hunt, Jr. have been approached for help. A lot of businesses had greatly increased their capacities or expanded with the assurance that the stabilization of Oregon Inlet was near. This was a direct result of the United States Congress authorization and funding of the project and the construction of the Industrial Seafood Park. Once again, coastal North Carolina was led amiss.

This project of Oregon Inlet, Manteo (Shallowbag) Bay has been overstudied. From engineering circles, environmentally and economically, this is a sound project. For the people, past, present, and future of North Carolina's Outer Banks and adjacent coastal communities, as well as those from afar, the time has come for this long overdue project to come to fruition, and we are here today to ask for your assistance in making this possible. Please, if you have any doubts, come to Oregon Inlet and see for yourselves. Whether you are a Congressman or laborer, a contractor or a grocer, an insurance man or a mechanic, or whatever your vocation, any decent human being should have absolute compassion for the challenges and hardships the citizens of northeastern North Carolina are facing in their efforts politically and monetarily to stabilize Oregon Inlet.

Thank you for this opportunity to relate some feelings that many, many people share about Oregon Inlet, North Carolina and its dilemma.

ADDENDUM TO

TESTIMONY ON HR 3082 AS REGARDS THE MANTEO (SHALLOWBAG) PROJECT

UNITES STATES HOUSE OF REPRESENTATIVES

COMMITTEE ON PUBLIC WORKS AND TRANSPORTATION

SUBCOMMITTEE ON WATER RESOURCES

February 7, 1984

Harry Brinkley Schiffman

Marina - Tugboat and Charter

Boat Operator. Member of the

Dare County Oregon Inlet

Commission.

Mr. Chairman, to properly address economic questions concerning expenditures pertaining to the Manteo (Shallowbag) Bay Project, operations and maintenence, I am enclosing a copy of statistics as reported by the Director of Civil Works. Please note the progressively increasing amount of expenditures each year, keeping in mind that at best, the inlet is much less usable at these figures than would be if it were stabilized and maintained.

Futhermore, I have come across some additional economic information which pertains to recreational boating in which you might be interested. Approximately 3,000 or more small recreational private boats from the eastern United States, average two weeks usage per summer with an average of approximately four people on board. This computes (3,000 boats x 14 trips = 42,000 x 4 people - 168,000) to 168,000 or more people/trips in the Oregon Inlet area per year. It is fairly estimated that this figure would double if Oregon Inlet were stabilized and maintained, thus providing recreation for 336,000 or more people/boat trips, or well over on quarter (¼) million people/trips. Surely, this type of economic input should not be left out in weighing the justification for the Oregon Inlet, Manteo (Shallowbag) Bay Project. The real life economics are obvious, if one is not wearing blinders or ear plugs, and studies with an open mind, the benefits and costs of this projects.

DEPARTMENT OF THE ARMY
OFFICE OF THE CHIEF OF ENGINEERS
WASHINGTON, D.C. 20314

2137-63

REPLY TO ATTENTION OF:

DAEN-CWO-M

DEC 12 1983

MEMORANDUM FOR THE ASSISTANT SECRETARY OF THE ARMY (CIVIL WORKS)

SUBJECT: Expenditures on Manteo (Shallowbag) Bay, North Carolina, Oregon Inlet -- INFORMATION MEMORANDUM

The purpose of this memorandum is to provide you with the following expenditures for the subject project as requested in your memorandum, dated December 2, 1983.

Manteo (Shallowbag) Bay, North Carolina

| Fiscal Year | Expenditures |
|---|---|
| 1984 | 5,252,800 Estimated (actual expenditure thru November - $801,200) |
| 1983 | 4,270,170 |
| 1982 | 2,204,476 |
| 1981 | 1,847,785 |
| 1980 | 1,230,064 |
| 1979 | 831,926 |

FOR THE CHIEF OF ENGINEERS:

JOHN F. WALL
Major General, USA
Director of Civil Works

MR. CHAUDHRY/272-0242
Typed by Gail M. Nevitt

REFERENCE LIST

1. "Preserving our Beaches." Sea Grant Today (No. 3, 1983). pp. 6, 7, 8.

2. "A Pro's Guide to Jetties." Salt Water Sportsman (January, 1984). pp. 78, 79, 80.

3. "Vance Brinkley Takes Rotary's Helm for Year." THE COASTLAND TIMES (July 18, 1952).

4. "A Letter to the People of the Outer Banks." THE COASTLAND TIMES (October 31, 1952). p 5.

5. "Ready to Begin Buying Land for Seashore Park." THE COASTLAND TIMES (July 18, 1952). pp. 1, 5.

6. "Park Service Sets Up Plans for Acquisition of Lands for Seashore." THE COASTLAND TIMES (July 25, 1952). pp. 1, 8.

7. "Field Research Facility", Duck, N.C. U. S. Army Corps of Engineers Brochure. (1983).

8. "The Crab", Coastal Research Amphibious Buggy. U. S. Army Corps of Engineers Brochure. (1983).

9. "Capabilities of the Army Corps of Engineers' Field Research Facility"

# Preserving our beaches

Morrough P. O'Brien, President
American Shore and Beach Preservation Association

In the November-December 1981 issue of *Sea Grant—Today*, Professor Pilkey pictured the nation's beaches generally as being severely damaged by progressive erosion, and he blamed coastal works constructed by man for this situation. The organization which I represent was formed more than fifty years ago with the objective of aiding in the preservation and development of the shores of this nation for beneficial use by people. It is the "people" aspect which has been almost completely ignored in recent planning and legislation regarding the shoreline.

The appeal of the open coast is so pervasive and the opportunity to enjoy this environment has become so generally available because of increased leisure time and convenient transportation that there will continue to be an insistent demand not only to retain existing developed beach areas but to increase their number and capacity. Accommodation of large numbers requires *permanent* facilities for lodging, transportation, recreation, sanitation, and other services at locations convenient for people of all ages. Such facilities are not easily moved, and when threatened by the sea, the appeal for protection is vigorous.

Air transport and interstate highways have made beaches on the outer coast accessible to inland residents, for even short vacations. Retirees and employees of companies which recently moved to the Sun Belt have further increased the pressure for permanent developments at our coasts. Land developers did not generate this demand, they only provide the means of satisfying it. The increasing number of retirees and the continuing movement of commerce and industry to warmer climates seem to indicate a continuing demand for more, not less, coastal development. To assume the contrary as the basis for planning is to ignore the greatest value of the shore—its contribution to the well-being of people.

Beaches for day-use, such as Jones Beach on Long Island, are major recreation facilities of most coastal cities. Some years ago, a nationwide survey showed that the annual total of visits to beaches exceeded that of all other types of recreation facilities combined, including tennis courts, swimming pools, golf courses, baseball diamonds, gymnasiums, and so forth in more than 700 cities, noncoastal as well as coastal. This survey did not include the cost per visit to build and maintain each type of recreation facility—but other data show that beaches are by far the least expensive. All of the other facilities serve a limited segment of the population, but the beaches can be enjoyed by everyone from babes in arms to senior citizens. Nearly all of the day-use public beaches near the population centers are filled to capacity in good weather. Parking space is generally inadequate.

*Santa Barbara Harbor Breakwater. Completed in 1928, this structure stabilized about 40 acres of land surface on the west (left) side, but it stopped sand movement eastward, causing erosion of the shore for many miles. Pumping sand from the shoal at the end of the breakwater to the east (right) beach in 1935 restored the natural rate of alongshore sand movement. Photo taken in 1978 shows the restored beach.*

Professor Pilkey states that mean sea level is rising, and he implies that it will continue to rise. Pertinent facts are:

- Mean sea level has been within a range of about 3 feet during the last 2000 years.
- There are some tide gauges on the outer coast which show no rise.
- Records of mean sea level rise at the *rate* of 0.33 feet per century during the past 40 years are questionable as the basis for forecasting the trend over the next century.
- Analyses of deep cores from the Antarctic ice cap raise a question regarding the effect of $CO_2$ warming of the earth, and melting of the ice. (See *Newsweek* October 5, 1981).

The possibility that mean sea level will continue to rise over the next century, and at an accelerated rate, portends severe problems worldwide. However, to make a valid forecast will require analyses of the causes of changes in the relative elevation of land and sea and an appraisal of their future effects. Such a study is being undertaken by the Marine Board of the National Research Council.

Structures have affected shoreline both favorably and

*This photograph of Lake Erie Park, Lorain, Ohio, shows what can be done with offshore breakwaters and sand fill to form the only good bathing beach for many miles on the Lake Erie shoreline. The cliffs and streams in this area supply very little beach material, and the natural beaches are narrow and not adequate for recreation.*

unfavorably, and one must keep in mind that most of the often-cited examples of shoreline damage pertain to structures built when the needs of navigation were paramount and antedated the systematic study of shore processes. Navigation requires harbors, and the connection of these harbors to the ocean is often the inlet to an estuary or lagoon. In the natural state, these channels are changed in location by tidal currents, sediment load, and winds. For safety, these channels are usually fixed in position by building jetties from the shore seaward on both sides of the channel, and the depth needed for shipping is maintained by dredging. These structures aid navigation, but they are frequently harmful to adjacent beaches. The reason for this effect is that there is wave-generated movement of sand alongshore, which reverses from time to time, but which usually has a net movement in one direction. Construction of a jetty interrupts this natural sand movement, often with unfortunate consequences for the coast down drift.

Although the systematic study of shore processes and the effect of structures was inaugurated in 1929 in recognition of the possible effects of navigation structures on adjacent beaches, it was not until 1968 that Congress recognized this situation through Section III of the River and Harbor Act which authorized redress for damage caused by Federal navigation structures. Not all such structures are Federal. Most of the examples cited by Professor Pilkey and others are in areas affected by structures built to improve navigation.

Limited space does not permit detailed discussion of the statements made by Professor Pilkey regarding coastal projects. My views on this topic are:

- Sand replenishment of eroded beaches with sand of appropriate size allows the beach to respond to the wave climate as did the sand replaced, after initial adjustment, the beach slope is no greater and responses to changing wave conditions are no more rapid.
- Many of the statements about erosion caused by bulkheads, revetments, and other structures *parallel* to the shore are clearly fallacious for the reason that such structures are built because erosion has already occurred. The structure could not cause erosion before it existed.
- There is a cycle of change in the width of a beach which is caused by the sequence of storms and calm weather; beaches are usually narrowest at the end of winter when storms are most frequent, and widest at the end of summer. When severe storms have cut deeply into a beach the recovery may be slow, sometimes requiring years to return to normal.
- The cycle described makes difficult identification of a long-term change, either erosion or accretion. Many of the reports of the rate of erosion are erroneous because observations were made at different phases in the cycle.
- Recent comparisons of surveys spanning more than a century and covering long reaches of coast show erosion, accretion, and no change. Final analyses of these data are likely to show some preponderance of erosion, but they do refute the contention that beaches everywhere are being progressively eroded.
- Many of the examples of the harmful effects of structures which are frequently cited, such as Cape May and Monmouth, New Jersey, had become problem areas before the systematic study of coastal engineering was started in this country; in fact, these very problems led to the choice of New Jersey for the first studies in 1929.

All is not perfect in the practice of coastal engineering, and some "fumbles" will continue to occur, but the record is excellent of those coastal projects which were planned and designed in accordance with modern concepts. □

# Preserving our beaches — a reply

Dean Monroe P. G Bruun's response to my earlier article in *Sea Grant Today* illustrates, among other things, the very large divergence in viewpoint of some coastal engineers and coastal scientists. This gap in itself is a major stumbling block to the establishment of a sensible long range coastal zone management policy on the American shoreline. The following are my thoughts on some of our areas of disagreements.

1. It is widely agreed that the sea level rise rate at present is at least one foot per century. Of course, due to local tectonic factors, some tide gauges show no sea level rise and in fact on some shorelines such as coasts of Alaska, the sea level is rapidly dropping because the land is rising. Essentially all scientists involved in the study of the various aspects of the greenhouse effect agree that the sea level rise should accelerate. The National Academy of Sciences has so warned the legislative branch of government and the Council of Environmental Quality has so warned the executive branch. Recent scenarios developed by EPA suggest that there may be a rise somewhere between two and ten feet by the year 2100.

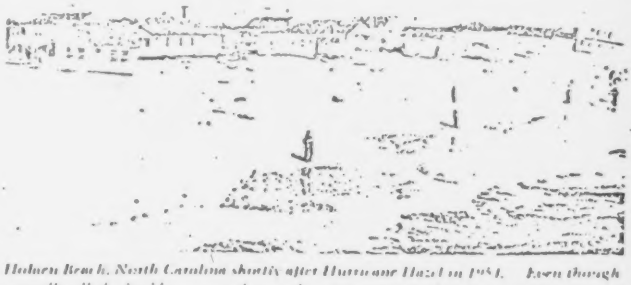
2. I was unaware that there was any controversy whatsoever about the fact that structures both parallel to the shore cause erosion of the recreational beach. According to the Corps of Engineers shoreline protection manual,[1] all such structures may intensify beach erosion. A more important philosophical point is that seawalls are not put in because beach erosion has occurred. Seawalls are put in because buildings are threatened. The difference is important. The photograph shows a picture of Holden Beach, North Carolina, shortly after Hurricane Hazel in 1954. Virtually all of the buildings were damaged or destroyed and the beach was immensely eroded (i.e., it retreated landward). However, the beach was wider than before the storm and was immediately used by swimmers and fishermen. Shoreline structures are not built because "erosion has already occurred." Erosion is only a problem for buildings. It is not a problem for beaches. Shoreline structures are built only to save buildings.

3. Widespread erosion is now an undeniable fact on all U.S. coasts, especially the barrier island coasts. Since the late 1930's our coasts have been repeatedly photographed from the air. Mistakes have sometimes been made in rate estimates but by and large the photographic evidence is clear and unequivocal. Rates are sporadic. Last winter, beach erosion rates jumped tremendously on both our Pacific and Atlantic coasts.

4. One does not have to look to Cape May and Monmouth Beach, New Jersey, to find shorelines where structures have damaged beaches. Ft. Ocean City, Maryland; Folly Beach, South Carolina; Tybee Island, Georgia; many miles of South Florida; Bay St. Louis, Mississippi; and Galveston, Texas. The rate of destruction of our recreational beaches is accelerating. After Hurricane David struck in 1979, the entire island of Sea Island, Georgia, was immediately seawalled. The houses were temporarily saved but at a cost of another rapidly degrading segment of American recreational beach.

Unquestionably some coastal engineering projects are justified to support commerce in harbors and to protect certain large cities. Beach replenishment is easily justifiable for beaches such as Coney Island. But America must come to grips with the ever more obvious environmental and economic problem of our rapidly degrading recreational beaches. The seriousness of the situation from the geologic viewpoint is indicated by the "white paper" signed by three-fourths of America's coastal geologists. The document calls for a fundamental reevaluation of our approach to shoreline management. Marine scientists must lead the way through public education and more direct action to affect the needed policy changes.

*Orrin H. Pilkey*
*Duke University*



*Holden Beach, North Carolina shortly after Hurricane Hazel in 1954. Even though virtually all the buildings were damaged or destroyed, the beach was wider after the storm. The photo was taken by Hank Gaylon and furnished by Steve Benton.*

[1] U.S. Army Coastal Engineering Research Center, 1973, Shore Protection Manual, Vol II: U.S. Government Printing Office, Chapter 5, page 5.



33-353 O—84——14

HOW TO Work A Jetty

There's more to fishing a jetty than simply walk out to the end and making a long cast. Here's h these rockpiles should be worked. By Russ Wil

# A PRO'S GUIDE TO JETTIES

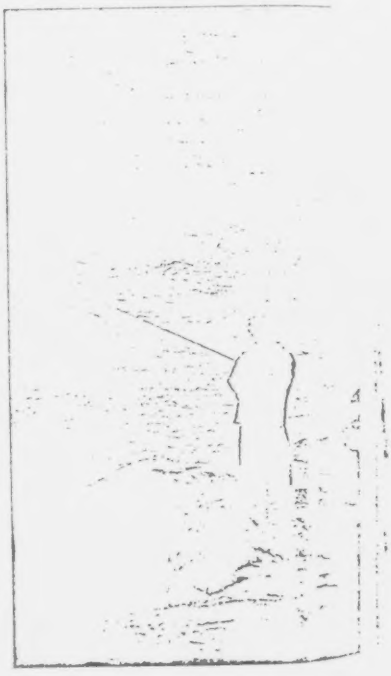
To the untrained eye, a crumbling rockpile is a formidable challenge. But to the experienced jetty jockey, every pile of rocks is like a well-travelled road where each turn of the wheel brings another familiar landmark into view.

The angler who has spent time learning how to fish the rocks knows that all jetties and inlets have basically the same characteristics and will yield game fish under similar circumstances. The newcomer, however, sees only a heap of rocks from which he can present his bait or lure to whatever kind of fish might be available at the moment.

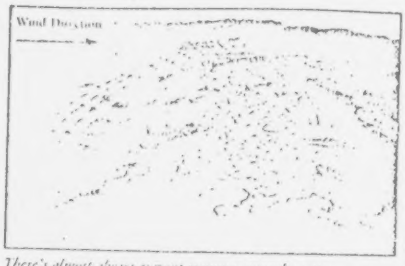
Between these two extremes is a common middle ground. Make no mistake, fishing from the rocks, whether man-made jetties or natural formations, can be a rewarding game. To enjoy this type of fishing thoroughly you must be prepared for a variety of situations. That's why ten percent of the fishermen catch 90 percent of the fish. Those who are members of the elite ten percent have learned how to play the game, and their prowess is reflected in their success. There are tricks that can save you time in the learning process. Winds, tide, water temperature and other lesser important factors will contribute to success or failure.

Most of the successful jetty fishermen I've known are opportunists. They fish hard and often, and when a situation arises where they can cash in on their knowledge, they bring in the big catch. They catch a lot of fish simply because they know the habits of their prey, and when conditions are right these guys make it a point to be slinging a bait or lure from the rocks.

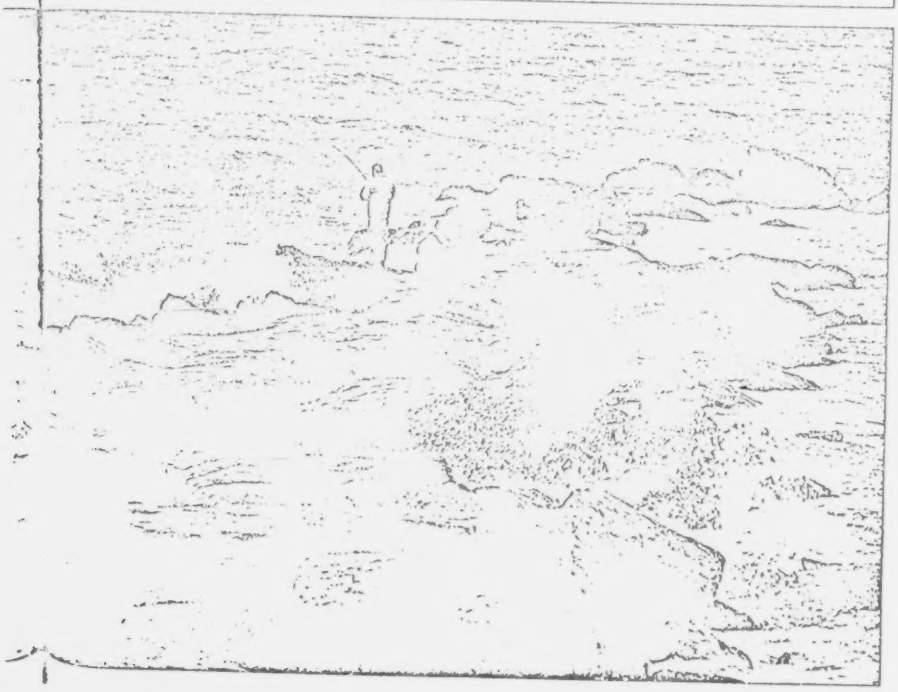
Probably the most important part of the successful jetty angler's makeup is the tackle he uses. Jetty and inlet fishing is a rather specialized type of angling, but you don't need to cast a country mile and you certainly don't need to lug a hundred pounds of tackle as you work from one jetty to the next. Mobility is the name of this game. It is not at all



*Wave and current action often gouges out deep holes at the end of a jetty. These depressions are normally found directly in front of the jetty or on either side, and will often hold fish.*




*There's almost always current running around a jetty. North winds, for example, will create a current that will run from the surf out and around the front. Southerly winds form the same pattern on the south side.*



unusual for a knowledgeable jetty angler to fish upwards of 15 different spots or inlets during the course of a night's fishing!

Many experienced fishermen carry only one rod, a shoulder bag filled with enough plugs, metals and bait for a couple hours of fishing, and a long-handled gaff to secure their quarry after it has been brought to the rocks. Most use a rod that measures somewhere between eight and nine feet overall. I've used an eight-footer for more than three decades and have yet to find it lacking any of the necessary qualities. Several hours of constant casting and retrieving

> An old-timer who fished the North Atlantic for the better part of 50 years once told me that he never cast more than 30 yards from a jetty.

does not cause undue fatigue, and through the years I've used it from Maine to Florida when seeking a variety of game fish weighing anywhere from a pound to more than 40 pounds.

You can pick a one- or two-piece rod, and there are definite advantages to each. The one-piece blank offers constant action from tip to butt, while two-piece models allow you the luxury of a rod that can be safely stowed in the trunk of the family auto.

Reels have undergone dramatic changes in recent years. I prefer conventional revolving-spool casting reels when fishing off the rocks since they allow me to "feel" the lure better as I work it in. With a revolving-spool reel I have complete control of the line and can detect the slightest change in the action of a plug, metal or bait. This results in more fish caught, at least for me.

On the other hand, if you learned how to cast with spinning tackle, by all means continue to use it. A medium-size spinning reel, matching rod of eight to nine feet and line testing at 15 to 30 pounds is a suitable outfit for jetties and inlets. You won't get quite the same control obtained with revolving-spool equipment but you do have the ability to cast without worrying about backlashes.

Most major manufacturers market reels that will give years of trouble-free service. Pick one that fits your specific need and fill it with a premium grade line.

A good gaff is a "must" item. I like the fiberglass models because they are lighter than wood and won't rot after a few years of hard use. Most rockpiles were originally constructed to stop the ravages of the pounding sea, and as a result most are built high off the water. That's the reason for a long handle. You must be able to secure your catch, and since you'll often fish ten or more feet from the water the gaff serves as an extension arm. My present gaff is built with a ten-foot handle and has a gap of two inches, plenty large enough for any fish I'm likely to catch from the rocks.

Footwear is very important. You probably know a shoemaker who repairs soles, heels and other parts of regular shoes and this same shop can probably make a set of good jetty creepers for you. I have golf soles glued to the bottom of a pair of knee boots, to a pair of hip waders, and to the soles of a well-used pair of chest waders.

I do a lot of jetty fishing in the northeast, where every jetty is constructed differently. Some are under water at high tide and can only be fished by wading through waist-deep water. Others are partially under water—hence the hip waders—and still others are built so they are completely exposed, even during easterly storms which bring exceptionally high tides.

A good light is a necessity when fishing night tides. I have a miner-type neck light and I carry the battery pack in my back pocket. It does the job, but doesn't get in the way when I'm casting or when I have to negotiate slippery rocks to reach a particularly "fishy" spot. Most shore area tackle shops sell these lights for a few dollars, but if you can't find a similar model you might try jury rigging a waterproof flashlight with electricians tape and a short section of surgical tubing as a neck cord.

Most veteran jetty fishermen take as little excess tackle as they can without chancing missed fish because of not having the right lure. I carry my plugs, metals, bucktails and other necessities in an Army surplus gas mask bag. I've used this for a dozen years and can stuff a half-dozen plugs, a similar amount of metals, a few bucktails and some pork rind into it without weighting myself down.

When I plan a trip and know I'll be using bait, I bring an extra rod and a bucket in which I can carry terminal tackle and a supply of fresh bait. This cuts mobility, but when using bait you normally don't do as much moving around, so the inconvenience is slight.

Most game fish frequent the shallow waters surrounding jetties for one reason—they want to eat. The rocks offer them a ready-made dining area where all kinds of baitfish, crustaceans and bottom life will be available. Wind direction, water temperature and the stage of the tide will determine your plan of attack. When the wind is whipping the waves to a froth you don't stand much chance of fishing the high tides, but that same rockpile could provide a bonanza at low water. By the same token, if the ocean is too calm your chance of success is diminished because predators aren't normally as active in their search for an easy meal.

A middle ground—of sorts—is necessary for optimum success. I like to fish just prior to an easterly blow or right after the ocean has settled from a storm. These are peak feeding times for many species, and should not be overlooked.

Tides are equally important. High water will normally cover most of the low-lying rocks, and will at the same time expose baits that are not within reach of hungry fish at low water. Some species can only be caught at high water, while others are strictly low-water feeders. A case in point is the blackfish (tautog) of northern waters. These are tough customers and one of the finest eating of all. You can catch them on a variety of crabs, clams or worms and more often than not your best results will be during high water.

# A LETTER TO THE PEOPLE OF THE OUTER BANKS:

[illegible]

[illegible]

[illegible]

The Coastland Times

# GRAND TIMES

ER RALEIGH COASTLAND OF NORTH CAROLINA

, JULY 18, 1952 Single Copy 5¢

## ...E OF ...D BY ...ARLE

...at Nags ... Again

...ce of the ...sociation ...njoyed a ...ay lun... ...hs. C. P. ...n of Co... ...f Engel... ...and Mrs. ... and oth... ...tion were ...f Wave... ...its long ...ridge to ...Croatan ...as might ...st judg... ...ay Com... ...n of the ...ts long ...bridges ...ally toll ...made to ...ridge.

## ...AKE ...UL ...DAY

...Make ...ches; ...e ...season, ...in the ...ccessful ...nts re... ...se price ...count ...s oper... ...section, ...headq... ...have ...siness. ...telhard ...e from ...nts on ...IN

## DR. ACEY TO CONDUCT LOST COLONY WORSHIP

DR. A. E. ACEY, pastor of the Monumental Methodist Church of Portsmouth, Virginia, will conduct the July 20 Religious program for the Lost Colony at Fort Raleigh.

A native Virginian, Dr. Acey attended the College of William and Mary, Randolph-Macon and Duke Divinity School. He has held pastorates in Richmond, and Danville, is secretary of evangelism of the Virginia Annual Conference, chairman of The Board of Evangelism of the South-Eastern Jurisdiction, and a member of the Department of Evangelism of the National Council of Churches.

## HATTERAS BUS LINE PLANS NEW SCHEDULE

As a result of the new paved highway on Hatteras Island and public demand, Hatteras-Manteo Bus Line officials plan to add one round trip daily beginning on Monday, July 28.

The new schedule will leave Manteo during the early morning, making one stop at the intersection of US Highways 64, 264 and 158 and the Hatteras Highway at Nags Head to pick up vacationists who wish to make the trip down the Outer Banks. The present schedule originates at Hatteras at 8 o'clock and goes to Manteo, and beginning the return trip from Manteo at 2 o'clock. There will be stops in all villages.

## SURFCASTERS TO HOLD TOURNEY IN DARE IN OCTOBER

### Nags Head Club to Invite Clubs from Many Communities to Enter Contest

Surf casting clubs from 20 or more Atlantic Coast communities, including several from North Carolina and Virginia, will take part in the Surf Casting Tournament planned for Dare Coast waters in the Nags Head area on October 3 through 5, it is announced by Bill H. Williams, president of the newly organized Nags Head Surf Casting Club, which will co-sponsor the tournament with the local Chamber of Commerce.

The schedule of events call two fishing periods of from three to four hours on Saturday, October 4 with an exhibition tournament on the same date featuring world record casters. Teams of five men each will be participating in fishing certain areas of the beach from Oregon Inlet northward to Caffeys Inlet on each of the three days of the tournament.

H. W. Shaner, secretary-treasurer of the Margate City Casting Club of New Jersey is assisting the local sponsors in making arrangements for the tournament.

### Trophies

First Award, the Nags Head Trophy, valued at $50.00, must be won three times for permanent possession by a club. Each member of winning teams will receive special medals, the first position awards in addition to the trophy amounting to $150 including gold medals.

A silver trophy goes to the team winning second place with silver medals to be awarded team members. A bronze trophy with bronze medals for team members will go to third place winners.

One of the first clubs to indicate they would enter the tournament was the newly organized Cape Hatteras Casting Club headed by Edgar Hooper and Raymond Bassnett. Nags Head's casting clubs will also be in the contest. Several teams from New Jersey and other states north of the Dare coast will take part in the contests, according to information received here from Shaner.

## READY TO BEGIN BUYING LAND FOR SEASHORE PARK

### Headquarters To Be Old Bodie Island Coast Guard Station

RALEIGH.—A Federal-state agreement signed Tuesday by Governor Scott and Director C. Gi... Ross of the State Department of Conservation and Development paved the way for authorities to begin acquiring land for the Cape Hatteras Seashore Recreational Area in Dare and Hyde counties.

Under the agreement, the National Park Service soon will set up a land acquisition office and begin buying land for the Seashore Area. Approximately 5,000 acres, including the State Park at Manteo, already are available for the project.

Ross said no definite date had been agreed upon for the acquisition to begin but "it will be within a few days."

The Council of State recently allocated $500,000 from the contingency and emergency fund for the purpose of buying land for the park. This, together with $118,000 already available for the purpose, will give the State $618,000 with which to match a similar sum donated to the National Park Service by an as yet unidentified person or group.

Ross said that A. C. Stratton of Richmond, Va., assistant regional director for the Park Service who flew here yesterday with the agreement, said the Park Service has the money but the donor has insisted on keeping his identity secret for the time being.

The U. S. Coast Guard, it is reported, will turn over to the Park Service the Bodie Island Coast Guard Station, now inactive for headquarters and offices.

Governor Scott signed the agreement as chief executive of the State. Ross signed as chairman of the N. C. Cape Hatteras Seashore Commission through which the State's funds must be sent.

Under the agreement, the State will spend "not less than $618,000" and the Federal government "not less than $618,000" for the purpose of acquiring lands. This means a total of $1,236,000 is available for land purchases.

The National Park Service of See PARK, Page Five

| | | |
|---|---|---|
| T. S. Meekins | 65.9 | 1.50 |
| J. H. & J. O. Meekins | 14.2 | 1.50 |
| E. B. Lennon, et als | 57. | 1.50 |
| S. B. Meekins | 44.7 | 1.50 |
| J. D. Nelson | 47.01 | 1.50 |
| R. B. Lennon | 1.2 | 1.50 |
| R. B. Lennon | .1 | 1.50 |
| R. B. Lennon | 2.4 | 1.50 |
| R. B. Lennon | .04 | 1.50 |
| R. B. Lennon | .02 | 1.50 |
| R. H. Quidley | .21 | 1.50 |
| E. J. Baum | 6.65 | 1.50 |
| E. J. Baum | .21 | 1.50 |
| E. J. Baum | .23 | 1.50 |
| E. J. Baum | 11.3 | 1.50 |
| E. J. Baum | .88 | 1.50 |
| E. H. Peele, Jr., | .02 | 10.00 |
| R. Bruce Etheridge | 909 | 1.50 |
| A. H. Daniels | .05 | 10.00 |
| A. H. Daniels | .02 | 10.00 |
| A. H. Daniels | .04 | 10.00 |
| T. S. Meekins | .78 | 10.00 |
| T. S. Meekins | 17½ | 10.00 |
| Geo. W. Mann | .07 | 10.00 |
| Geo. W. Mann | .03 | 10.00 |
| R. Bruce Etheridge | 19.5 | 8.00 |
| W. E. Midgett | .165 | 10.00 |
| Cantwell Harris | 3.3 | 20.00 |
| H. E. Midgett | .55 | 10.00 |
| Total | 4006 | |

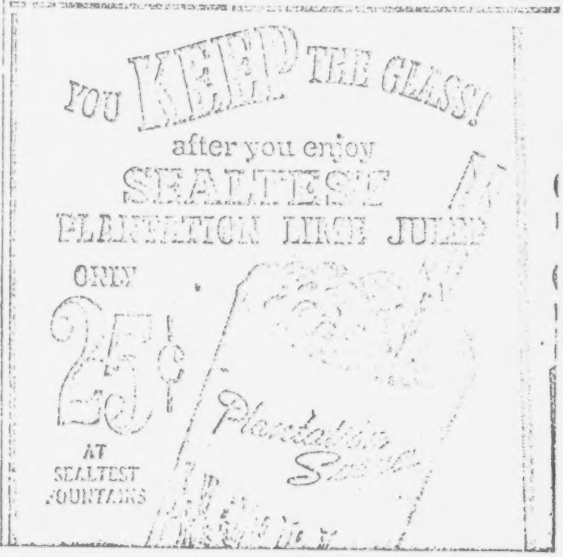
## PARK
(Continued from Page One)

fice will negotiate for the lands to be bought with both the State and The Federal funds. However, where condemnation is necessary in the State courts, the action will be conducted by the N. C. Attorney General. Wherever possible, such proceedings will be held in the Federal Courts, with the U. S. Attorney General filing the action.

The State will turn over to the Park Service all lands "acquired in the name of the State for the Cape Hatteras National Seashore Recreational Area and all lands now held by the State within the area, except lands acquired and held for highway purposes."

## BOOKMOBILE NOTES

The next Bookmobile trip will be Tuesday, July 22nd. Stops will be at Columbia at 10 A. M.; Kitty Hawk, in front of the school building 11 A. M.; In front of Baptist Church, 11:45 A. M.; Kitty Hawk Post Office, 1 P. M.; Duck, at store, 2:30 P. M.; Nags




The Coastland Times
July 18, 1952
page 5

## WRECK

(Continued from Page One)

Fisheries Boat Ocracoke, with Capt. Claude Sawyer, in all seven and a half years with the State.

## SOLDIER

(Continued from Page One)

ing soldier was employed by A. C. Lawrence Leather Co. in Hazelwood, N. C.

## PARK

(Continued from Page One)

appeal will be handled by the Service land acquisition office, which will act as agent for the North Carolina Cape Hatteras Seashore Commission, an official body authorized by the State legislature in 1929.

The total area within the project boundaries comes to approximately 330 square miles of land.

The act which authorized establishment of the seashore recreational area provided that, "Except for certain portions of the area, deemed to be especially adaptable for recreational uses, particularly swimming, boating, sailing, fishing and other recreational activities of similar nature, which shall be developed for such uses as needed, the said area shall be permanently reserved as a primitive wilderness and no development of the project or plan for the convenience of visitors shall be undertaken which is incompatible with the protection of the unique flora and fauna or the physiographic conditions now prevailing in this area."

It also provided for retention of the migratory bird refuge status of the Pea Island Refuge, just south of Oregon Inlet, administered by Interior's Fish and Wildlife Service, but makes it a part of the area. A further provision specified that legal residents of the villages contiguous to the area would have the right to "earn a livelihood by fishing within the boundaries" of the area, subject to rules and regulations to be promulgated by the Secretary of the Interior.

An amendment to the original act, passed in 1940, permits hunting on the waters of the sounds included in the area; on Ocracoke Island, and on not more than 2,000 acres of other land which may be designated by the Secretary of the Interior.

Large-scale maps of the project are being made available for public inspection at Kill Devil Hill National Memorial, on Roanoke Island, at Fort Raleigh National Historic Site on Roanoke Island, and a number of other public places near the project. In addition, the National Park Service plans to hold a series of public meetings at the several Outer Banks communities, in order to give all interested residents an opportunity to learn in detail about the project.

Biologically, the area is of extraordinary value and interest. The myriad of migratory waterfowl that have flown from the Atlantic Coast of New England and Canada southwestward to the south coast of Alaska, in narrowing funnel down the eastern shore of the United States, where they concentrate in great numbers in Currituck, Alligator and Pamlico Sounds between the barrier islands and the mainland of North Carolina. These islands are some of the finest places on the coast to observe the seasonal migrations of the shore birds and other migratory waterfowl.

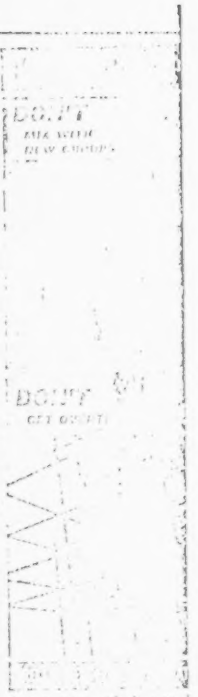
Small fishing villages have remained for many generations on the protected, or sound, side of these islands because of the exceptional patterns of fish migrations at this point on the Atlantic Coast. At Hatteras Island, the inshore (summer) fishing grounds and the offshore (winter) fishing grounds converge. Consequently, these are exceptionally fine waters for both sport and commercial fishing.

The barrier islands themselves possess great variety of habitat and landscape, including sandy beach, grass covered dunes, immense bare sand dunes, salt and fresh water marshes, and native pine and oak forests, in addition to a considerable variety of native grasses, marsh plants, shrubs and trees.

Scenically, the superb expanses of ocean beach, broken occasionally by narrow inlets, and accented here and there by Coast Guard Stations, lighthouses, the great sand dunes, and the picturesque sheltered fishing villages, present landscapes of rare and appealing qualities.

the NEW STAR in
RUBBERIZED PAINTS
SAMPSON'S
Smooth Satin

## MIDDLETOWN NEWS.




Several cases of ... reported and ... recommended by the Nat... When polio is around, it ... to watch for the ... such symptoms should ... Then, call your doctor, ... call your local chapter ... assistance, too.

## HYDE HOME CLUBS WITH 4-H IN RAL...

Miss Alma Cathey, home ... and her eleven repre... girls and boys left Mond... ing to be numbered ... 1,000 boys and girls ... the annual 4-H Club ... Raleigh.

The week's program ... demonstrations, lectures, ... ing trips, swimming parties ... health pageant.

The Health King and ... from each county will c... the State King and Qu... Berry and Betty Cro... Fairfield are Hyde County ... sentatives. Miss Mann will ... in the dress revue com...

This crown is to help [illegible]

The Coastland Times

July 25, 1952

page 8

The Coastland Times
bottom of page 1
July 25, 1957

Mr. and Mrs. Hines were universally loved on Roanoke Island.

AUTHOR - After twenty - six years of school teaching, Mrs. H. B. Hines has retired. During that time Mrs. Hines has lost just two school days from her classes, and both the county board and the local board have asked her to give them at least one more year of her time.

Dixie Hollowell was born in Chowan County, the daughter of Mr. and Mrs. N. J. Hollowell. At an early age they went to Edenton, where she attended the old Edenton Academy, later to Berkeley, Va., where she attended Ezzland Institute. At the age of 18 she took her first school in Chowan county. It was a one room, one teacher school, for that was before the days of school buses and consolidated schools. She taught there six years.

And then she married the Rev. H. B. Hines. After her oldest son, H. B. Hines, Jr., now city manager of Sanford, entered college, Mrs. Hines began herself to attend summer school at the University of North Carolina and Wake Forest the better to prepare herself for resuming the teaching profession.

She then went to the school at Manteo where she taught the seventh grade for nine years. Coming then to Pamlico county she taught in the schools there for eight years. And then she came to Aurora three years ago, her work was to teach third and fourth grade children, which she continued until the end of the school year just completed, and her retirement.

Mrs. Hines states that she will now indulge in her hobby which is to keep house for her husband, and to help him in his religious work. Mr. Hines is pastor of the Aurora Baptist Church.

Mr. and Mrs. Hines have two other children Miss Margaret Hines, of New York, better known to thousands of C. B. S. television watchers as Margaret Arlen, and Mrs. W. C. Pott, of Atlantic City, N. J., the wife of a navy man now stationed there.

Children are not so easily disciplined now-a-days, Mrs. Hines says as they were in the earlier days of her teaching. She attributes this to the automobile, radio and TV, and generally to the expansion of the means of living that has taken place in the last generation. She still loves children though, despite their restlessness, and the children and their parents will miss Mrs. Hines when the next term of school begins.

## TOPPING'S FAMOUS SAUSAGE PRODUCTS

Regular delivery now of the famous Pantego County Sausage made by Scott Topping is now maintained along U.S. 264 and to the Dare Beaches. Mrs. Odell Wilkinson of Pantego, who is spending the summer at her cottage near Whalebone represents this firm. Her phone number in Oregon Inlet 121.

Outer Banks - North and South and The Sol Watchaw, of 2512 Elizabeth, Salvo, Avon, Buxton, Frisco, Hatteras and thereabouts - Invitations and absences of the are excluded, as required by the 1937 act of Congress, but also are several areas surrounding them, to give adequate room for their expansion.

This portion of the Outer Banks of North Carolina comprises one of the few extensive stretches of undeveloped seashore remaining on the Atlantic Coast, Secretary Chapman stated.

From the standpoint of the economy of eastern North Carolina and particularly of the neighboring communities, establishment of the National Seashore Recreation Area - the first of its kind in this country - is of paramount importance. One of the basic purposes of the National Park Service, in connection with it, has been and will continue to be to protect the way of life - the enjoyment of hunting and fishing, for example - to which the people of the Outer Banks have been accustomed for generations.

The very fact of establishment is bound to have vastly increased attention and interest on this extensive and storied area, in the opinion of National Park Service officials. "As has been stated many times since the project was first suggested, the National Park Service will look to the communities outside the Recreation Area - there on Roanoke Island; those along the banks to the north; and those adjoining the area and facing on Pamlico Sound - to provide overnight accommodations, meals, boating, fishing, hunting and other facilities that visitors would require. The result, Service officials believe, is bound to be a great enhancement of commercial opportunity in these neighboring communities, which possess a pleasant and hospitable flavor of great appeal to visitors. There is ample room for the provision of such facilities; if they are good, there is every reason to expect that these communities will prosper beyond all past expectation."

Author of the 1937 legislation was the Hon. Lindsay Warren, then representative from North Carolina's First Congressional District, and now Comptroller General, who has retained his interest in the prospect during the nearly 12 years since he took over his present position. Mr. Warren has taken an active and effective part in the recent negotiations which resulted in the decision of the Governor's Council to make $150,000 of the State's funds available for the project, as has his successor in Congress, the Hon. Herbert C. Bonner.

Within the agreed upon boundaries of the project, the State of North Carolina and the Federal Government already own 11,631 acres, all of which will be included in it. Although the State's contribution toward the purchase funds named be turned over to the National Park Service for expenditure, negotiations for land purchases to which these funds will be

See PARK, Page Eight

Investigation and absences of the scalp, the face of the frontal bone and such head injuries.

The boys were returning from playing for a dance at the Dare County Shelter Club at Nags Head Saturday night. Sterling was driving and, according to police apparently fell asleep.

Sterling was drummer of the small band which had played at Nags Head on several other occasions. He and Mulphurs graduated from Granby High School in Norva, where Stokes is studying. Watchaw is a student at Maury High School.

Sterling had been employed by the Virginia State Highway Department as pages on the Newport News-Pine Beach ferries. He was to have entered Mulgrave State College in September on a music scholarship.

He had been engaged in musical activities in Norfolk for several years as a member of the Granby High School band and as leader of his own dance band. The group with which he was playing at Nags Head was not his regular band.

Sterling was a member of the Norfolk Chapter, Order of DeMolay, and as an Eagle Scout of Troop 15 held the silver, gold and bronze palms.

The three injured teen-agers were reported in "fair" condition in Norfolk General Hospital Sunday, but doctors said it was still too early to determine the extent of the injuries. All suffered internal injuries.

Sterling died of a possible laceration of the brain, a base skull fracture, multiple compound fractures of the jaw and lacerations of the neck and face.

Besides his parents, Sterling is survived by a sister, Mrs. Robert E. Morris, and a grandmother, Mrs. J. Woodward Jones, of Norfolk.

## NAGS HEAD MIDSHIPMAN ABOARD U.S.S. MISSOURI

Among the almost 2,600 U. S. Naval Academy and Naval Reserve Officer Training students taking part in the first of the Navy's three summer training cruises is Naval Academy Midshipman Fred O. Purser, USN, son of Mrs. Lucille S. Purser of the Carolinian Hotel, Nags Head, aboard the battleship USS Missouri.

Twenty-six ships, including the battleships USS Missouri and Wisconsin; the carrier USS Saipan; the heavy cruisers USS Macon and Des Moines; ten destroyers; four minelayers; three attack transports and supporting subs are in the training Task Group.

Commanded by Rear Admiral James L. Holloway, USN, the Task Force departed Norfolk June 9 and will return Aug. 6.

During the cruise, the midshipmen will visit Guantanamo Bay, Cuba, and two European ports whose visits have been arranged to visit points of interest and allow them to collect souvenirs for the home folks.

# THE ARMY CORPS OF ENGINEERS' FIELD RESEARCH FACILITY

## INTRODUCTION

The Coastal Engineering Research Center (CERC) is one of five Corps Research and Development laboratories at the U.S. Army Engineer Waterways Experiment Station in Vicksburg, Miss. CERC's mission is to conceive, plan, and conduct research and data collection in coastal and ocean engineering and nearshore oceanography to provide a better understanding of waves, winds, water levels, tides, currents, and the resultant coastal processes. Also considered are the interactions of these forces and processes with shores and beaches, inlets and inner continental shelves, coastal and offshore structures, and the materials forming them. CERC's research focuses on shore and beach erosion control, flooding, sand bypassing, dredging, navigation improvements, recreation, environment, and the design, construction, operation, and maintenance of coastal and offshore structures. Research is conducted through laboratory experiments, theoretical investigations, and field investigations. To support its field investigations, CERC maintains a Field Research Facility (FRF) at Duck, North Carolina.

The Facility (Figure 1) provides the Corps of Engineers, and the worldwide coastal research community, with a capability to conduct a wide variety of field research and development studies vital to the Corps' coastal engineering mission. In addition to long-term collection of high quality engineering and oceanographic data used to develop statistically-valid data bases, short-term comprehensive measurements are made to develop an improved understanding of the natural processes important to coastal design and construction. Because the Duck site is representative of many U.S. coastal locations, both data sets can be used to meet the urgent need for field data to calibrate and verify the accuracy of predictions made by the analytical, numerical, and physical models in widespread use as design tools.

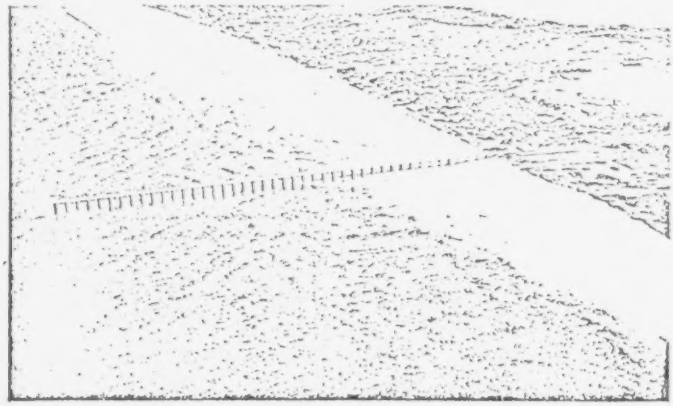


**Figure 1.** Coastal Engineering Research Center, Field Research Facility, Duck, NC.

Scientists and engineers conducting research in the harsh environment of the coastal zone face particularly difficult data collection problems. Fixed oceanographic instrumentation usually require installation under less-than-ideal conditions and once operational, the sensors can be exposed to a wide variety of hazards, particularly during storms. Accurate bottom surveys of the nearshore zone (particularly through the surf zone) are difficult to obtain using conventional boat-mounted fathometers. Because of such past difficulties in collecting comprehensive, accurate coastal engineering field data, the state-of-the-art of coastal engineering has been slow to advance, and coastal design methods have been subject to many uncertainties.

The Field Research Facility now provides a means to obtain the data necessary for improving coastal design methods. It is unique in that it is the ONLY facility in the world that provides a dependable means of obtaining comprehensive measurements of coastal phenomena during severe storms. It is also the only facility of its kind in the United States where field research studies in all areas of shore protection and restoration, coastal flooding and wave prediction, and coastal ecology can be supported. No other field laboratory possesses the capabilities (in equipment, instrumentation or manpower) to conduct the applied research studies necessary to advance the state-of-the-art in Corps' mission areas.

## PHYSICAL PLANT AND EQUIPMENT

The Facility, consisting of an office building, field support building, and an 1840 ft-long research pier, is located on a 176 acre site at Duck, NC, about 60 miles south of Norfolk, Virginia. Although portions of the complex were completed at different times, the Facility began fulfilling its research mission by mid-1980, and has an expected lifetime of 50 years.

The research pier is a reinforced concrete structure supported on 3-ft diameter steel pilings spaced 40 ft apart along the pier length, and 15 ft apart across the width. The pier deck is 20 ft wide and extends from behind the dune line to the 25-ft water depth, at a height of 25 ft above mean sea level. Completed in 1977, the pier provides a stable platform from which measurements and observations of waves, currents, and other environmental variables can be made during all weather conditions.

The main building contains staff offices, an instrument repair shop, a computer room, and a diving locker. Completed in 1980, the building is designed to withstand hurricane winds, and serves as a self-sufficient base of operations during severe weather, as well as for related physical and biological studies of the site and nearby sound, bay, and ocean areas.

The field support building houses several vehicles and storage areas, and contributes to the Facility's capabilities as a site for testing new instruments and procedures for engineering and oceanographic research.

The Coastal Research Amphibious Buggy (CRAB), Figure 2, is a unique three-wheeled vehicle used primarily for accurate surveying of the nearshore zone. Designed and constructed by the Wilmington District of the Corps, the CRAB is an aluminum-tubing tripod supported at each vertex by a water-filled heavy equipment tire. The 35-ft high platform on top of the tripod supports the operator, motor, and up to 400 lbs. of equipment or personnel. The CRAB is powered by a 53-hp Volkswagen engine which transmits power through a variable stroke pump to hydraulic wheel motors located on each wheel. As a survey vehicle, the CRAB is equipped with a light-reflecting prism used with a laser survey instrument to obtain highly accurate horizontal and vertical positioning data. The CRAB also supports other tasks in the nearshore zone, such as sand sampling, and current and wave data collection, and serves as a mobile, yet stable, platform for bottom coring and diving.

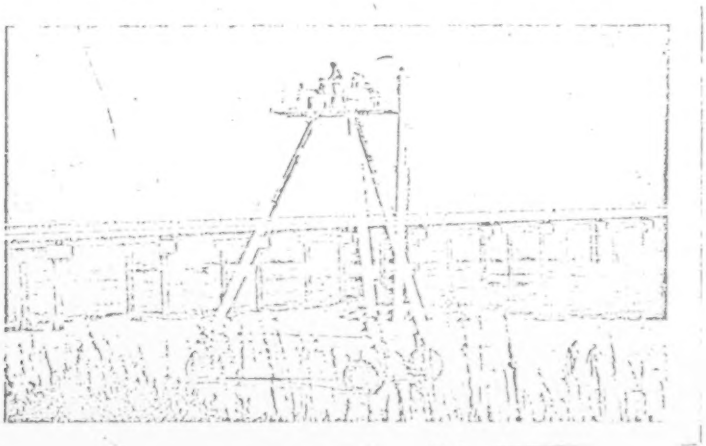


Figure 2. Coastal Research Amphibious Buggy (CRAB) at Field Research Facility.

The second amphibious vehicle used to support a wide variety of research tasks at the Facility and in surrounding areas is a reconditioned LARC-V (Figure 3). Originally built for the Army to transport cargo between ships and land, the vehicle now serves primarily as a diving platform and tow vehicle. It is also used to convey buoys and instruments to offshore sites for deployment.

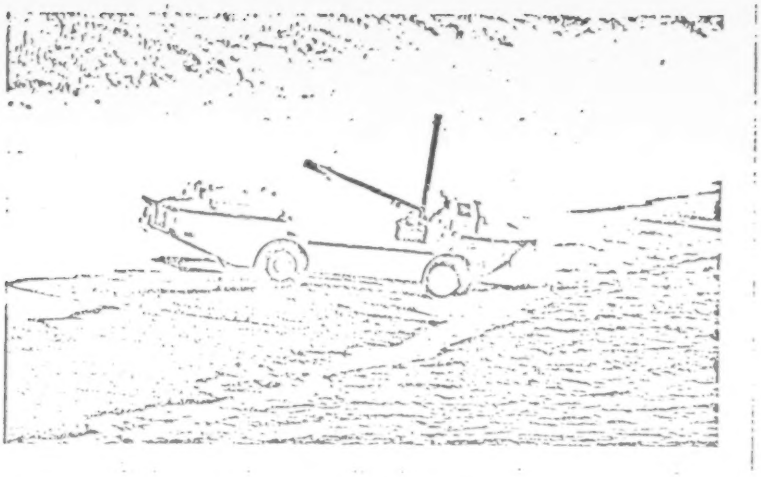


Figure 3. Field Research Facility's LARC-V.

The Facility also possesses four-wheel drive vehicles, boats, and special purpose equipment to support the multitude of on-site research projects.

## THE FRF STAFF

The research staff of about 10 (scientists, engineers, technicians, and support personnel) is tasked primarily with conducting a comprehensive program of field research at the Facility. The staff also advises visiting scientists of any localized effects on work planned at or near the Facility. Through intimate contact with the natural environment (six members are Scuba divers), the staff has a much-needed sense of the important processes controlling beach changes, wave transformation, current generation, and other phenomena which would not be gained by scientists merely visiting the Facility. This perspective is useful in training younger members of the CERC staff assigned to the Facility for short-term research projects, and in assisting Corps' offices with the design and implementation of field research efforts.

## RESEARCH STUDIES CONDUCTED AT THE FACILITY

Two research work units are conducted by investigators at the Facility. The FRF Measurements and Analysis work unit is tasked with the collection, analysis, and dissemination of comprehensive engineering data on the following topics: waves, currents, winds, general weather features, beach and nearshore profile changes, and water quality. Benefits to date have been related to improved formulas for predicting design wave heights, information on pier effects, and long-term measurements of nearshore profile data to

determine patterns of sediment movement (Figure 4). A monthly data report is distributed to over 75 users, and an average of 70 requests for FRF data are filled each year to assist researchers in solving specific coastal engineering problems. This work unit assists in minimizing the overall costs associated with individual research studies, since this basic data set would normally require collection by each investigator.

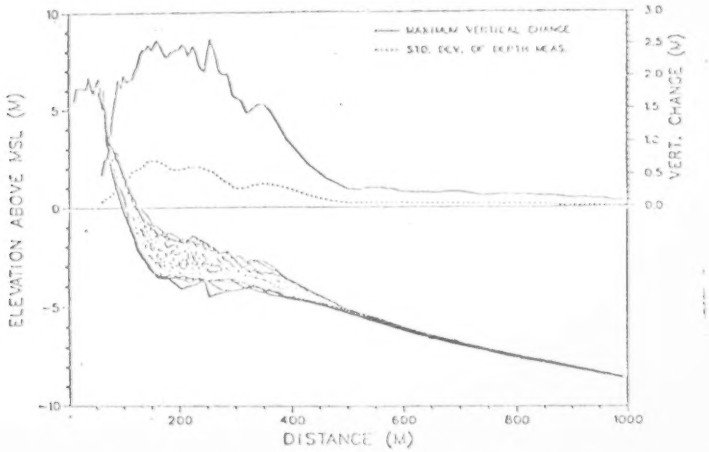



Figure 4. Elevations and maximum vertical change as a function of distance offshore between January 1981 and December 1982, along a profile 1690 ft north of the FRF pier.

A second study involves the collection of wave and survey data during storms to determine the processes controlling sediment transport characteristics and beach erosion. A series of pre and post-storm profiles (Figure 5) taken by the CRAB shed new light on the magnitude of vertical change in the nearshore zone. The depth of negligible vertical change farther offshore was shallower than expected, and found to be a function of incident wave height and period.

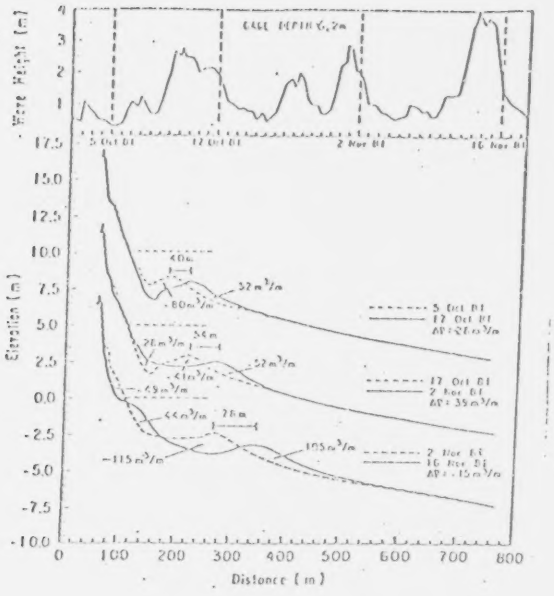



Figure 5. Storm-induced changes along profile located 1690 ft south of the FRF pier.

Researchers from CERC have also conducted special studies using FRF resources. Measurements of waves from deep water to the breaker zone were made using several wave gages along the pier, and the resulting wave and bathymetric data have already been used to rewrite the wave transformation formulas. The waves and wind in nearby Albemarle Sound were monitored for a winter to determine the accuracy of models used to predict shallow water wave characteristics.

Accurate prediction of extreme water levels during storms and hurricanes is dependent in part on determining the contribution due to wave effects (i.e. wave set-up). Quantitative measurements of set-up were obtained during a series of winter storms which indicate that wave set-up does contribute significantly to water level extremes.

The Facility has served as the site for several coastal ecological experiments on dune grass and marsh grass stabilization techniques. Test plantings of several marsh grass species were evaluated over several years to determine the optimum type, planting time, and nutrient level for effective shoreline erosion control.

In order to fully utilize the unique potential of the Facility, and to obtain as many benefits to the Corps and the nation as possible, non-CERC use of the Facility and data are actively encouraged. To date, over 25 other government agencies, particularly the Navy (Figure 6) and the National Oceanic and Atmospheric Administration, have conducted research or development studies at Duck. Eighteen universities from as far away as California and Oregon have availed themselves of the free use of the pier and surrounding acreage for research studies ranging from wave transformation to effects of salt spray on vegetation.

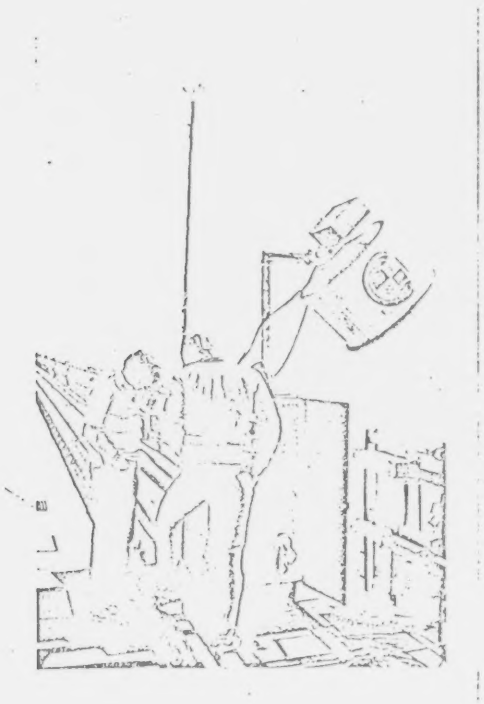


Figure 6. Naval Research Laboratory (NRL) experimental radar deployed at CERC's Field Research Facility.

Perhaps one of the most productive accomplishments of the Facility is its utilization as a site for cooperative studies by CERC and groups of outside researchers. Pooling of resources (funds, manpower, equipment, and data) to investigate complex coastal processes is a must in this day of reduced federal budgets. Several such studies have been conducted at the Facility over the past six years.

In 1978, DUCK-X brought together 24 participants to evaluate the use of remote sensing for coastal studies, particularly the capabilities of the SEASAT-A satellite. Ground truth data from the FRF proved extremely useful in verifying synthetic aperture radar images sent from the satellite.

The Atlantic Remote Sensing Land and Ocean Experiment (ARSLOE) was held in October 1980, and included 31 U.S. participants and 4 foreign researchers. In addition to evaluating remote sensing techniques, wave transformation theories were tested and wave directional measuring systems evaluated. Data collected during ARSLOE have been of great value in developing improved design criteria for coastal structures, and in determining the best instruments for measuring waves, currents, and other oceanographic parameters.

In the fall of 1981, several university investigators combined with CERC staff members to determine the spatial and temporal variability in sediment characteristics, and to relate changes in these characteristics to cross-shore processes. Their findings will reduce costs for design and construction of beachfills and coastal structures.

During 1982, FRF staff members and researchers from the U.S. Geological Survey, Oregon State University, and the University of Washington conducted a comprehensive month-long study to document nearshore morphological changes and the processes which produce them. The effect of the research pier itself on waves, currents, and sediment transport was also assessed. Movie cameras and closely-spaced current meters and wave gages on the pier, two mobile instrumented sleds and the CRAB (Figure 7) were used to collect wave, current, and bathymetric data. Through a series of joint technical reports and papers, significant knowledge will be provided to field engineers on previously undefined details of sediment depositional and erosional processes.

In addition to FRF staff involvement with cooperative research studies, individual staff members' expertise in field data collection and analysis, beach and nearshore processes, and coastal oceanography are combined with resources of the Facility to meet specific user requirements on a reimbursable basis. Sponsors of such work include the New York, Galveston, Los Angeles, Wilmington, and Norfolk Districts of the Corps, the National Park Service, the

33-653 O—84——15

was provided to a Naval Civil Engineering Laboratory in verifying a Navy mooring force model. Following a preliminary study to determine the spatial and temporal variability in the nearshore wave field, wave, wind, and current data were collected near a moored Navy vessel (Figure 6). Simultaneous data on mooring cable forces were obtained aboard ship. The process data are used as input to the computer model, and predicted forces are compared to those measured at the site.

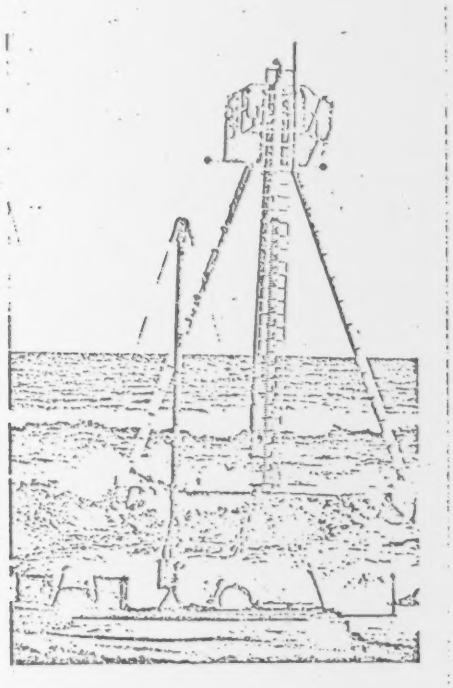


Figure 7. Coastal Research Amphibious Buggy (CRAB) towing instrumented sled for wave and current measurements.

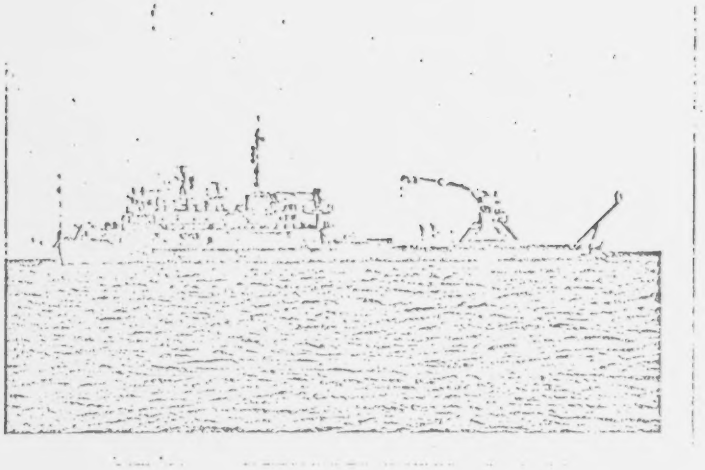


Figure 8. Navy vessel OCP SEACON during field evaluation of mooring force model at CERC's Field Research Facility.

## SUMMARY

The Field Research Facility provides a means of conducting the field research studies urgently required to improve the state-of-the-art of coastal engineering, both in understanding the processes affecting coasts and coastal structures, and in developing better tools and methods to predict the effects of these processes on man's activities. One of the major contributions will be comprehensive, high quality sets of field data required for development of advanced numerical models of coastal hydrodynamics and sediment transport. In addition, field experience gained at the site will enhance not only CERC's field research program, but with proper technology transfer, Corps-wide field expertise. Finally, the FRF has no equal in the world as a unique site for non-CERC investigators to conduct coastal research studies on a wide range of subjects. Such studies have been shown to benefit not only the particular user, but the Corps of Engineers as well.

# TESTIMONY ON HR 3082 AS IT RELATES TO THE MANTEO (SHALLOWBAG) BAY PROJECT

## HOUSE COMMITTEE ON PUBLIC WORKS AND TRANSPORTATION

## SUB-COMMITTEE ON WATER RESOURCES

FEBRUARY 7, 1984

By: Arvin A. Midgett
Charter Boat Operator and
Member of Dare County's Oregon Inlet Commission
Manteo, North Carolina

TESTIMONY ON H.R. 3082 AS IT RELATES TO THE MANTEO (SHALLOWBAG) BAY PROJECT

HOUSE COMMITTEE ON PUBLIC WORKS AND TRANSPORTATION

SUB-COMMITTEE ON WATER RESOURCES

FEBRUARY 7, 1984

Mr. Chairman and Members of the Sub-Committee, my name is Arvin Midgett. I'm a charter boat operator from Oregon Inlet on the Outer Banks of North Carolina. I'm also a member of Dare County's Oregon Inlet Commission of Manteo, North Carolina. I know that I speak not only for myself and my charter boat friends but also for the hundreds of private and recreational boatman, small commercial fishermen and frankly all who use Oregon Inlet. The message that I would relate to you hardly needs five minutes to deliver ---- it's really very brief, and basic, but sincere .... WE NEED HELP!

We need your help because what has to be done to save us cannot be done by our group else we'd have completed it years ago with less effort, expense and study as has already been experienced;.... and certainly with less anguish.

Sportfishermen have been working out of Oregon Inlet for over fifty years now and they're still awaiting what may never come without your help ---- a safe, deep, wide inlet to pass thru to open sea. We learned' way back in 1970 that Congress had authorized proceedings that would eventually effect such an inlet, but, the time never comes .... and more than ever now, WE NEED YOUR HELP!

I operate my 46' sportfisherman out of Oregon Inlet Fishing Center just one mile North of the channel through the bar. Our inlet even now is very narrow and shallow; dangerous even to the everyday, experienced boatman; deadly many times to the unsuspecting week-end type recreational vessel. There are about fifty other vessels from this same marina who share this passage to sea, not to mention the hundreds of vessels from other areas along the coast who come thru here. Of these 50 vessels, easily 35 are charter boats. They will average 125 trips per season and at a $500 daily rate will generate well over 2 millon dollars annually. With a deep, stabilized inlet, we could only expect the number of boats and trips sailed to increase; hence an increase in revenue. Isn't this desirable? For us the proximity of Oregon Inlet to the best fishing grounds on the entire East Coast is vital. There simply isn't another inlet, save Oregon, from Hatteras Inlet up to the Norfolk, Virginia area. If Oregon Inlet is impassable it will shut many of us down as we are equipped for relatively short, inexpensive, daily trips. Too, if our inlet is not improved over it's present conditions we can expect a lot of "lost days" due to it's being impassable. Further, the smaller recreational boatman will presently find only a limited use of this passage; if they are prudent.

Just yesterday morning I stopped my truck atop Oregon Inlet Bridge and looked out across the breakers of the bar and wondered just how much longer I'd be able to continue my profession. Again I share much of the dismay that must confront hundreds of other skippers as they look upon this scene.

If time only permitted, I could go on and on about how improving Oregon Inlet would greatly benefit us all. I do hope that you'll ask me about my views on such matters as improving the quality of the waters in Eastern North Carolina; or Oregon Inlet the safety valve; or, what a boon to recreation would result ..... by improving Oregon Inlet. Finally, we ask that you look favorably at what is proposed by H.R. 3082. With all "things" considered we truly see no evil for anyone at what it plans. Improving Oregon Inlet must have a start somewhere and we feel that this proposal should be that start .... FOLKS, WE NEED YOUR HELP!

COUNTY OF DARE
MANTEO, NORTH CAROLINA 27954

TESTIMONY ON H.R. 3082 AS IT RELATES TO THE MANTEO (SHALLOWBAG) BAY PROJECT

UNITED STATES HOUSE OF REPRESENTATIVES

SUBCOMMITTEE ON WATER RESOURCES

FEBRUARY 7, 1984

BY: THOMAS B. GRAY

CHAIRMAN, N.C. SEAFOOD INDUSTRIAL PARK AUTHORITY

MEMBER, DARE COUNTY BOARD OF COMMISSIONERS

BUXTON, NORTH CAROLINA

LAND OF BEGINNINGS

TESTIMONY ON H.R. 3082 AS IT RELATES TO THE MANTEO (SHALLOWBAG) BAY PROJECT

UNITED STATES HOUSE OF REPRESENTATIVES

SUBCOMMITTEE ON WATER RESOURCES

FEBRUARY 7, 1984

My name is Tommie Gray, and I am a native of Dare County. I live at the far end of Hatteras Island, the furthest point in the county from Oregon Inlet and Wanchese. My experience with this project goes back many years, to the efforts of Dare County and the state of North Carolina to obtain the property needed to create the Wanchese Seafood Industrial Park. This park was an integral part of the original authorization of the Manteo (Shallowbag) Bay Project given by Congress at the passage of the Rivers and Harbors Act of 1970. Dare County and North Carolina lived up to their part of the bargin, and did in fact dedicate lands and construct facilities for the seafood park. On October 15, 1978, I was sworn in as chairman of the North Carolina Seafood Industrial Park Authority, and have served in that capacity ever since. Unfortunately, the whole tenure of my service has been marred by the seeming reluctance of the federal government to live up to its part of the Manteo (Shallowbag) Bay Project. I should also add that I have been a member of the Dare County Board of Commissioners for 10 years, and this project has been a county priority since the 1940s.

Let me say at the outset that I have the greatest admiration for some of the opponents of this project, namely Orrin Pilkey and Dr. Stan Riggs. I only wish they were correct in saying that Hatteras Island is migrating west. The fact is that the island is eroding from both sides. Areas I used to play ball in as a youngster, growing up on Hatteras Island, are now well in the Sound. And while I may not be a coastal engineer or scientist, I am none-the-less an environmentalist, and a very keen observer. I can tell you plainly from years of watching these shores that there is a strong correlation between the shallowing and closing of Oregon Inlet and Hatteras Inlet to the south and the acceleration of erosion both on the ocean and the estaurine sides. They are not independent phenomenon; the one has direct bearing on the other, as all who have spent their lives on Dare's coast watching the interaction of wind, water and sand can tell you. And there is a second correlation, equally definite, equally verified by simple observation over decades, over a lifetime: the closing and shallowing of our inlets has an effect on the amount of fish harvested in our inland estuarine waters.

Several sounds and more than 20 rivers empty to the sea and receive beneficial tidal flushing action through Oregon Inlet. Keeping this inlet open is vital to the estuarine system and prime nursery areas on the Sound side.

I have heard other opponents of this project refer to the natural beauty of our coastline and of the "physical degradation" that the jetties would represent. I have heard George Deems, who claims to be from Dare County although his home is actually not even in North Carolina, speak for the North Carolina Beach Buggy Association and assert that the jetties will ruin the beaches of the Cape Hatteras National Seashore.

With all due respect, I must challenge Mr. Deem's supposed sincere concern about erosion; I cannot help but feel that his and his organization's concern is no more than selfish interest. The Beach Buggy membership is primarily drawn from other states which do not have a vested interest in the stability of our beaches. No one could argue with the damage done by the ORV, the four-wheel drive recreational vehicles that churn up the shorelines of our coast. If Mr. Deems is truly concerned about erosion, and about the pure, natural look of the coast, then why does he not suggest to the National Park Service that all vehicular driving on the beach be banned?

I have heard opponents of this project say that the jetties represent too heavy a burden on the American taxpayer, that this project is "a local public works project," that no real economic benefit can accrue from building jetties. We of the North Carolina Seafood Industrial Park Authority have screened literally hundreds of applicants for the

Wanchese Seafood Industrial Park, especially in the early days of construction when all anticipated that the stabilization of Oregon Inlet by jetties was assured. Since that time, we have seen increasing reluctance on the part of the private sector to invest in an area that is dependent on an unstable ocean access. I for one would not be quick to invest in new industry knowing the unreliable conditions often prevailing at Oregon Inlet and the dangers it has presented and can still present to even the most skilled seaman.

Nonethe less, we have right now one application for lease at the park and we are working with three more firms who are expressing interest in locating there. Of the four, three can serve what industry already exists and are designed to serve not only the large ocean-going trawler but the smaller boats that fish the sound waters as well. The past interest we have had in the Wanchese Seafood Industrial Park and the interest we still see today only shows what potential this area holds. At the slightest indication of reasonable access through Oregon Inlet, the private sector has always been quick to respond and continues to show such interest: businessmen know how lucrative the fishing industry can be, especially with the second richest fishing grounds on the entire east coast a mere 35 miles away from Wanchese through Oregon Inlet.

It is true that the costs of jetty construction have risen over the years. But the delaying tactics of the radical environmentalists who appear to control the thinking of the bureacracy--and I speak as a former bureaucrat myself, so I know well how the bureaucratic system functions--are primarily responsible for these increases. Had not these tactics been used in a

period of very high inflation, we would have had an extremely positive benefit-cost ratio, and I think that given the merits of this project and the interest I KNOW the private sector has, the ratio will continue to be positive. When you consider that the jetties would have cost a mere $11 million had they been built when the project was authorized, and when you factor in the inflation experienced during the past 14 years, it is easy to see why the environmentalists used this delaying tactic.

But all these factors, as important as they are, must take a back seat when we compare them with the lives and livelihoods of our American commercial fishermen. Notice that I say AMERICAN fishermen and not Dare County fishermen or North Carolina fishermen. So rich are these fishing grounds that fishermen from all over the east coast, from Texas and Florida as far north as Canada, come to fish our waters in the winter, when their own waters are depleted. And when I think of our own fishing families, the God-fearing and sea-faring Etheridges and Daniels, people who have built such businesses as the Wanchese Fish Company, I admit I am often confused and sometimes even angry. This Administration, and others before it, has urged the American people to be self-sufficient, to be independent, to shoulder their own loads. More and more we hear talk of trouble in the Social Security programs and other forms of national economic aid. If we are truly concerned with self-sufficiency, with getting people off of the government welfare roles, than we should support this effort.

Our commercial fishermen are among the most self-sufficient and reliant people this nation has. They ask little, being both fiercely proud and well able to make their own way. They are patriotic and appreciative of this nation and its freedoms. And in the case of the fishermen who use Oregon Inlet, they have always been a trusting people, believing the federal promise of stabilization. Unfortunately, they have felt only betrayal for that trust. All they ask is that the Congress reaffirm its earlier promise, and provide the sea access they need to continue making their living.

Your favorable posture on this legislation will guarentee them that access and ensure that their way of life can continue; I urge you to do no less.

# STATEMENT

BY

Willie Etheridge, Jr.,
Wanchese, North Carolina

Before the
Subcommittee on Water Resources
Committee on Public Works and Transportation
U.S. House of Representatives

February 7, 1984

H.R. 3082 - Title IV

My name is Willie Etheridge, Jr., and I am a commercial fisherman from Wanchese, North Carolina. I started as a lad in 1931, following in my father's footsteps, just as he followed in his father's. In that time, I have passed in and out of Oregon Inlet more than 4,200 times. I am a pretty good fisherman, I know where the fish are. I have studied their life cycles and feeding habits under the best teacher there is: necessity.

My heart is with the sea, only nowadays, it goes out there with my children and grandchildren as well. That is one of the things that scares me; the other I will talk about in a few minutes.

For the Etheridges of Wanchese, to be a fisherman is the logical calling. But our heritage is threatened by a new uncertainty. One of the world's most plentiful fishing grounds is not two dozen miles from our dockside, yet every time we leave to get to it, or coming home, we risk our life and our life's savings. Tragedy is as timeless as men going to sea to fish. But it is no less agonizing for its antiquity —— especially when it could have been prevented.

One night in 1971, we followed a trawler to the Oregon Inlet bar where she broke up right in front of us before we could get to her. Two bodies were found, but the captain's never was. A year later, so his family could collect his benefits, the Social Security asked me to sign an affadavit to say that there was no way he could have survived.

On Easter Eve, 1979, we were waiting outside the ocean bar for a fog to lift. When it did, the first trawler through Oregon Inlet reported a boat broken up on the bar and we went to look for survivors. I knew the waters well enough to know where to look, but when we reached where they were, one was dead and the other was dying.

Fishermen are reminded of their lost bretheren every day. You can see the Lois Joyce every time you pass in or out of Oregon Inlet. Her remains are a ghost with real seas breaking to outline her. In the past year or so, the Lois Joyce has been nearly joined by other boats; I think of the Cheryl Ann and the Darana R because these two boats are named for their captains' loved ones in Wanchese.

The Darana R stayed aground for three days and was badly damaged; the Cheryl Ann was battered by a freak wave in the Inlet. These tragedies do not happen quickly like an auto accident; they occur slowly and every moment is broadcast to everyone by marine radio. The real Darana R and Cheryl Ann probably listened; just as the real-life Lois Joyce listened when the boat named for her went down. I wish I could testify adequately about the effect this has in Wanchese. I wish, too, that I could make you feel this hearing room floor rise and fall the way the deck does when you're in Oregon Inlet; it stops your heart and parches your throat!

Here in the Nation's Capital, it is almost possible to forget that places like Wanchese even exist. We are so far from you, Members, in time and traditions and lifestyle and experience. But something else separates us, too; and that is the other thing that scares me. We feel we have been tricked and fooled and put on hold by Washington; but we are shocked to find that the opponents will stop at nothing to delay these jetties, including lies.

I said that my teacher on the water all these years had been necessity. A fisherman is a special kind of environmentalist; he has to be to survive. We depend on Oregon Inlet. The so-called environmentalists who have spoken on this project have only a commitment to a school-taught concept of how things happen in nature —— out there. I understand that one of the leading opponents has not been to the Outer Banks in more than three years. They do not describe the environment we fishermen know or would want to live in.

They are so experimentally-inclined everything they say begins with "maybe," "probably," or "could be;" —— I call them "Mr. Maybe, Mr. Probably, and Mr. Could-be." I hope this subcommittee deviates from what we fishermen have seen so far to ask these so-called experts some tough questions about the forces of nature we take for granted on the Outer Banks. I know the fishermen are anxious to get a chance at questions like that.

Other than that, all I can do at my age is hold up to you here today, the generations of Etheridges —— past, present, and future —— and say "enough is enough!" The battered hulk of the Lois Joyce is not a fitting monument for America to show its fishermen and say: "we believed the lies!"

# TESTIMONY ON H.R. 3082 AS IT RELATES TO THE MANTEO BAY PROJECT

UNITED STATES HOUSE OF REPRESENTATIVES

SUBCOMMITTEE ON WATER RESOURCES

FEBRUARY 7, 1984

Michael Daniels

Wanchese Fish Company

Mr. Chairman,

Thank you for giving us the opportunity to tell you a little about our unique way of life. I am a native of Dare County. I am one of fifteen children who operate a family-owned fishing and packing facility. There are eleven boys and four girls, the majority of whom are still trying to operate the business. I guess we could have given up years ago, but Senators, it's hard to give up something you were raised doing.

I started to work at the fish house at the age of six. Coming from a large family, everyone had to pull their weight. My first job was to ice boxes because I wasn't strong enough to lift the boxes or weigh the fish. Yet, through the years of straining and getting stronger I worked up to stacking, sorting and eventually delivering and selling fish to New York, Baltimore, Philadelphia and other northern and southern markets.

We started out with one boat, a 65 foot Army T which we converted to a fishing trawler. Over the years we worked hard and listened to politicians who told us that Oregon Inlet would be jettied and that the fishing industry was going to grow. We started to purchase bigger boats and eventually signed contracts for boats that could fish in a greater depth of water for squid, butter fish, hoke and mackerel.

Mr. Chairman, we are a proud people. We aren't asking for a handout. What we want is what we are entitled to - a chance to work for a living.

I wish you would come down and let us show you what we are talking about. Experience the anxiety that we are feeling. For example, what if the 14th Street bridge was torn down and replaced by a swing bridge with no lights. Consider that it was totally impassable at night, and you could cross it only twice a day with only two hours to cross each time. I wonder....how many days would you miss because of fog, rain, sleet, snow and wind? Mr. Chairman, that's what we are up against. We don't get paid by the day or week or month. There is no retirement, health benefits or pension. We only get paid a percentage of the fish we catch.

On December 22, 1983, after the hopper dredge had been here for sixty days, we had a boat attempt to come in. It ran aground on the bar, tore the keel off, lost forty days of work and cost 35,000 to fix it.

Is this a safe inlet? No, not even after two million dollars had just been spent.

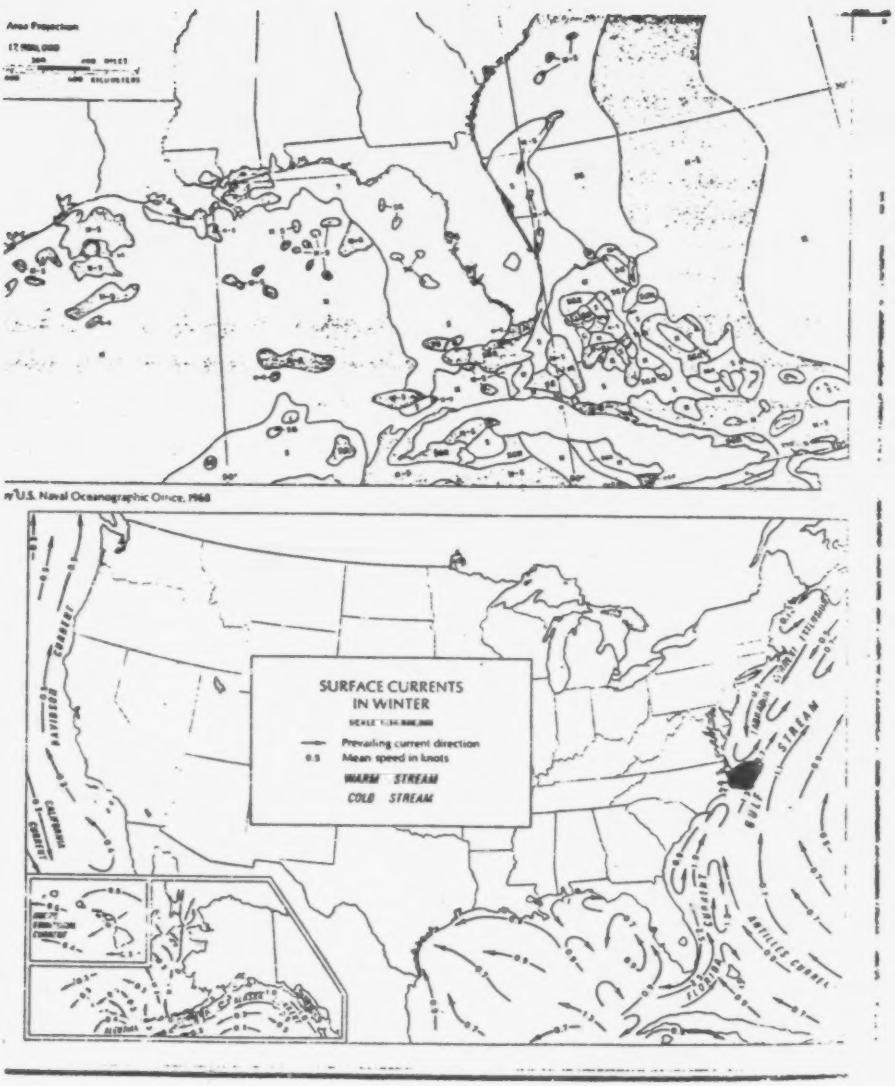
Last year, to move our fleet out of Wanchese, we rented a building with no electricity. We had to take our own generator, trucks, boxes, ice and crew over one hundred miles to attempt to unload. Yes Sir, we are still here putting the burden on your shoulders. What are you going to do about the bill? It is our American heritage, not only North Carolin, but the whole East Coast.

In the summer of 1981, while running one of our trawlers out of Gloucester, Massachusetts, I met an old fisherman. He began to tell me about fishing along the Outer Banks in the winter when there were no fathometers or lorans. They used lead line to check the depth and then mark the area with a bouy. Mr. Chairman, these people don't come anymore! They don't want to risk boats and lives trying to cross the inlet.

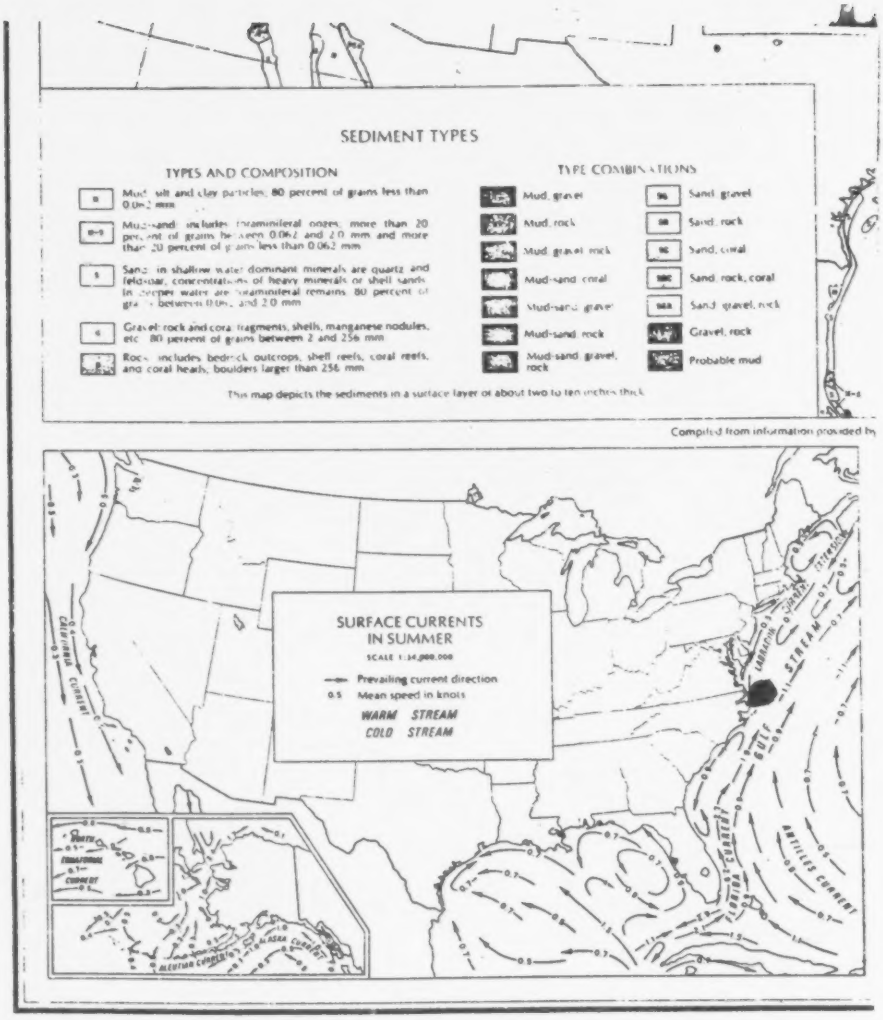
There were four boats fishing for squid out of Wanchese last year. Three of the four boats brought their catch to land to be processed. The fourth was a joint venture. Among the four boats, there was over 3 million pounds of squid caught from July to November. We can thank you all for the two hundred mile limit.

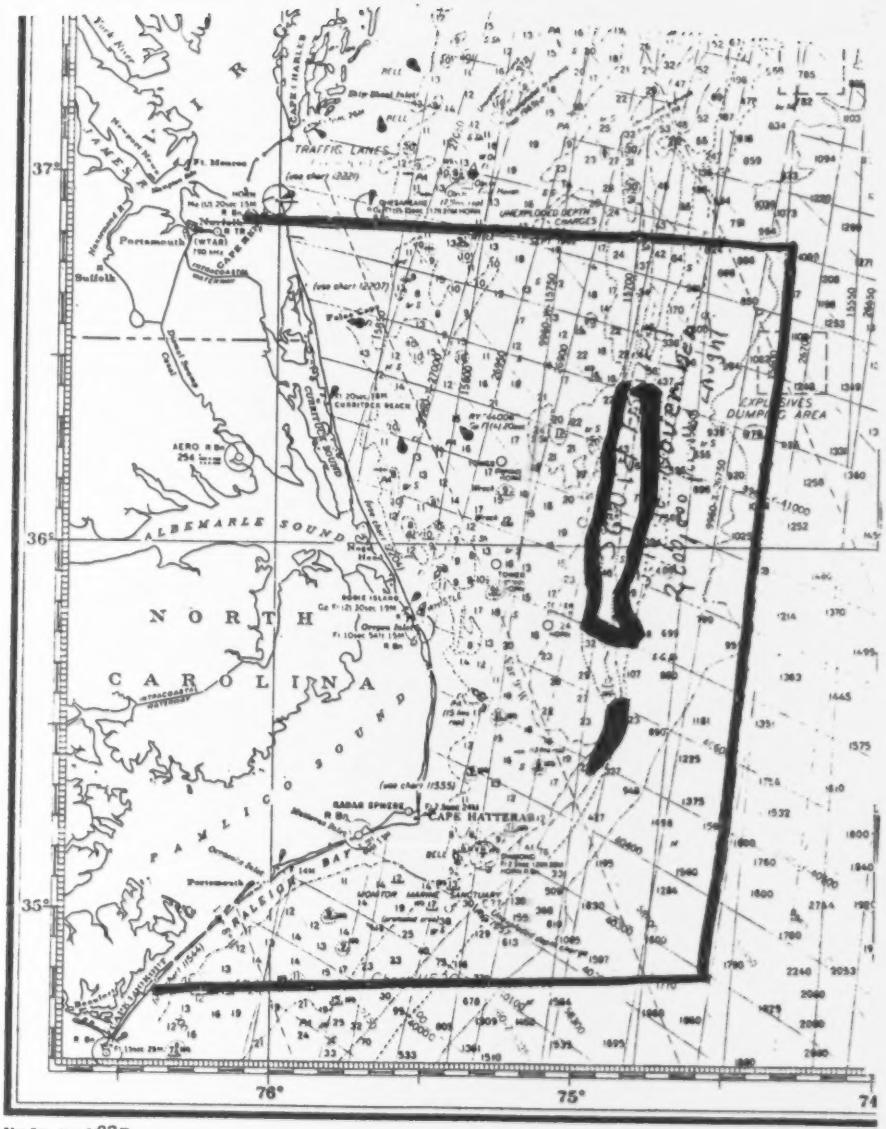
Mr. Chairman, from Maine to Mexico we have a total of fifty-five jetties. All are operative and all are successful. It is imperative for you to pass this bill.

Thank you.




n U.S. Naval Oceanographic Office, 1968


SEDIMENT TYPES
TYPES AND COMPOSITION
Mud: silt and clay particles; 80 percent of grains less than 0.062 mm
Mud-sand: includes foraminiferal oozes; more than 20 percent of grains between 0.062 and 2.0 mm and more than 20 percent of grains less than 0.062 mm
Sand: in shallow water dominant minerals are quartz and feldspar, concentrations of heavy minerals or shell sands in deeper water are foraminiferal remains; 80 percent of grains between 0.062 and 2.0 mm
Gravel: rock and coral fragments, shells, manganese nodules, etc; 80 percent of grains between 2 and 256 mm
Rock: includes bedrock outcrops, shell reefs, coral reefs, and coral heads; boulders larger than 256 mm
TYPE COMBINATIONS
Mud, gravel
Mud, rock
Mud, gravel, rock
Mud-sand, coral
Mud-sand, gravel
Mud-sand, rock
Mud-sand, gravel, rock
Sand, gravel
Sand, rock
Sand, coral
Sand, rock, coral
Sand, gravel, rock
Gravel, rock
Probable mud
This map depicts the sediments in a surface layer of about two to ten inches thick.
Compiled from information provided by
SURFACE CURRENTS IN SUMMER
SCALE 1:34,000,000
Prevailing current direction
0.5 Mean speed in knots
WARM STREAM
COLD STREAM
CALIFORNIA CURRENT
LABRADOR CURRENT
GULF STREAM
FLORIDA CURRENT
ANTILLES CURRENT
NORTH EQUATORIAL CURRENT
ALASKA CURRENT
ALEUTIAN CURRENT




35th Ed., June 5/82 ■

**13003**

**LORAN-C OVERPRINTED**

Squid Caught by four Trawlers boats from July to November 1982

2,000,000 pounds

## JETTIES ON THE EAST COAST

TOTAL 55

ALL OPERATIVE
ALL SUCCESSFUL

| | | | |
|---|---|---|---|
| Maine | 3 | South Carolina | 4 |
| New Hampshire | 1 | Georgia | 1 |
| Rhode Island | 1 | Florida | 18 |
| Mass. | 7 | Alabama | 1 |
| New York | 6 | Louisanna | 1 |
| New Jersey | 5 | Texas | 3 |
| Maryland | 2 | | |
| Virginia | 1 | | |
| North Carolina | 1 | | |

Post Office Box 612
Wanchese, North Carolina 27981
(919) 473-5831

# OREGON INLET USERS ASSOCIATION

STATEMENT FOR THE RECORD

BY

Gilbert R. "Moon" Tillett
President
Oregon Inlet Users Association

Before the

Subcommittee on Water Resources
Committee on Public Works and Transportation
U.S. House of Representatives

February 7, 1984

H.R. 3082 - Title IV

# STATEMENT FOR THE RECORD

BY

Gilbert R. "Mcon" Tillett
President
Oregon Inlet Users Association

Before the

Subcommittee on Water Resources
Committee on Public Works and Transportation
U.S. House of Representatives

February 7, 1984

H.R. 3082 - Title IV

Mr. Chairman, Members of the Subcommittee: The Oregon Inlet Users Association was created in 1982 by commercial fishing families in Wanchese, North Carolina, to foster a more active involvement by fishermen in the advocacy process to obtain a renewed Federal commitment to the stabilization of Oregon Inlet and to fight for certain other fishermen's causes. By the autumn of 1983, the Association's success at attracting public support permitted it to concentrate on developing programs. The Association initiated academic contacts to co-operate in a study of the economic impacts of alternative policies at Oregon Inlet, and with community service professionals

to study and attack other problems related to an unstable Oregon Inlet.

By the beginning of 1984, the Association represented more than 300 participants from all walks of life in northeastern North Carolina and from farther afield. It was queried regularly on fishermen's issues by the media and by scholars; had produced educational and training materials and policy statements; and assisted fishermen with a variety of government accountability problems.

Before I got into this unexpected and unwanted struggle, I passed in and out of Oregon Inlet more than 3,800 times as a fisherman. Starting in 1944 at the age of 14, I carried sport fishing parties in the summer and fished commercially in the winter. By 1959, I was able to purchase my first large trawler, although I continued to carry sport fishing parties in the summer until 1965. In 1977, I came ashore to run my fish house in Wanchese, and in 1975 and 1979 respectively, I helped set up my two sons as trawler captains aboard their own boats. I speak, therefore, as president of the Oregon Inlet Users Association, buttressed by 40 years' experience as a commercial fisherman, when I urge these subcommittees to report Title IV favorably.

It is the position of the Oregon Inlet Users Association that, put in the hands of the Corps of Engineers, the proposed land footings for the jetties to be built at Oregon Inlet will be enhanced environmentally (without jeopardizing the wilderness mandate), and solve a serious economic problem of the ordinary citizens of northeastern North Carolina. Any dispute on this issue with the

so-called environmentalists, we believe, is the result of their lockgrip embrace of an abstraction which arises out of their tendency to apply an impractical intellectual rigidity to a demanding and unstable situation. Worse, but beyond our ability to explain, is their resort to falsehoods, inaccurate figures, and outright unscientific assertions in their do-or-die effort to delay jetties at Oregon Inlet.

As the natural constituency of the ocean, fishermen are the fundamental environmentalists: to survive, we must husband all life in the food chain of the sea and of the interface between the land and the sea. We are inextricably tied to plenty and scarcity as we find it, not as we theorize it could be or might become. For this reason, the incentive structure in our management of the environment contrasts sharply and in important ways with the professional environmental elite's, some of whose testimony this subcommittee will hear on this issue.

We catch and sell fish. If we ignore the rules that govern supply and demand in this age-old exchange of private interests, we go broke. If we fail to heed a trend that we are in a position to observe first, or take unfair advantage of fish stocks, we penalize our future earnings and our children's. As we are a traditional and conservative people, this would be alien to our nature even if it were not an irresponsible business practice. Let me set the record straight here, too; as residents of the Outer Banks, we treasure the recreational facilities at the Cape Hatteras National Seashore and the Pea Island National Wildlife Refuge as much as any visitor, probably more! It

would be foolish and self-defeating not to, we do not spend all the time at sea.

But unwillingly, we find ourselves opposed by an articulate and ruthless movement wedded to a philosophy we think misleads the public with visions of a permanent Garden of Eden and an intellectual bias which encompasses no moral requirement for honesty or accuracy. Like most legislative decisions, whatever is produced by these hearings for Oregon Inlet, either way, will benefit one well-defined and vociferous group and anger another. But the cost of dredging indefinitely or of constructing jetties will be borne by the entire body of American taxpayers. Therefore, how can members of these subcommittees step back from the rhetoric and self-interest to see a path to a decision in a broader public interest with a general popular benefit?

We believe that the realities of the marketplace —— the fisherman's daily habitation —— can be the only reliable guide to what makes sense: environmental sense, economic sense, and common sense. Environmentalists and wilderness enthusiasts need not fear a decision thus arrived at. By letting the supply and demand of the ocean be heard, all people have a measurable voice in the decision, not just those skilled at political manipulation. I quote from the January, 1984, issue of National Fisherman (Volume 64, number 9; page 27: "(T)he problem for environmentalists is that they are much more adept at politics than experienced in the environment. Round them all up and ask them what's the difference between a tide and a current, and most won't

know."

We want jetties in part because they will cost the taxpayer less in the long run than continuous dredging; I've already mentioned that we are a conservative and traditional people. We also are taxpayers. Major General Wall tells us that the Corps of Engineers has spent so far to dredge Oregon Inlet

| in Fiscal Year | this amount |
|---|---|
| 1979 | $ 831,926 |
| 1980 | $1,230,064 |
| 1981 | $1,847,785 |
| 1982 | $2,204,476 |
| 1983 | $4,270,170 |
| 1984 (projected) | $5,252,800 (estimated) |

without producing satisfactory results able to withstand storms and consistently navigable and safe. At this rate, the $92,170,000 which jetties would cost over a 50-year period, will soon have been poured into Oregon Inlet anyway.

Local knowledge, which the environmentalist Kallikaks especially undervalue, will, it is my experience, always cost less than outside experts would have you spend. The quality of our husbandry of the oceans depends upon daily choices like this; we favor jetties for economic reasons that any citizen can understand as well as for navigation and safety reasons only another

fisherman can fully comprehend.

The subcommittee has heard from the beach buggy people. That they have been able to cloak themselves in the mantle of environmentalism is a profound bafflement to us. The Oregon Inlet Users Association, using accepted survey techniques, polled a sample of rank-and-file beach buggy members. We found that (1) most do not agree with the leadership's opposition to jetties at Oregon Inlet, and (2) that there is much internal division and disgruntlement with their self-appointed zeal on this issue. This is not the only abstraction you have been presented as the solid thinking of this political elite. You have heard this statement:

> "Squid. The American taxpayer should make a $600,000,000 (sic) commitment, the Army Corps of Engineers said, so fishermen in oversized trawlers could get through Oregon Inlet and catch squid. Squid. Which, it turns out, aren't there!"

Unspoken in this testimony, but as fundamental to it as the misinformation which is its message, is a distrust of squid as a human food —— a sadly provincial attitude. Squid are plentiful off Oregon Inlet. One of my sons' boats during the four-month squid season last year caught one per cent of the annual squid output of the largest squid processor on the Pacific Coast. Four Wanchese boats fishing for four months, and four Wanchese boats fishing for two months last year together brought in more than four million pounds of squid caught within 160 miles of Oregon Inlet. While the official figures show that up north squid catches have been down for two years over the high

averages of 1972 through 1981, in 1982, North Carolina fishermen landed 36,000,000 pounds of squid caught in that same semicircle. A sad footnote to this, however, is that the bulk of this catch was carried to Virginia ports to be processed, adding cost to the consumer, reducing its freshness, and —— this is important to illustrate the blind spot in the environmentalist philosophy —— reducing fishermen's incentive to bring squid ashore at all.

This reduced incentive wastes food, misallocates food, burdens less plentiful stocks, and penalizes every consumer. The affected constituency extends beyond America's shores. As you know, squid has been eaten in Greece since Aristotle described the species and it is popular in the Mediterranean basin today. The Japanese eat 500,000 of the 900,000-ton world squid catch. Virtually everywhere on Earth, squid is popular because it transports well, is inexpensive, preserves well, is versatile, is easily prepared, and is tasty. My optimism concerning squid illustrates what we mean when we say that fishermen are the natural constituents of the oceans; squid are a plentiful, resilient, and useful species. Simple unfamiliarity with squid is a poor reason to denegrate it as a human food or as a potential product of American waters. It is worse still to claim squid do not exist where they do —— and are increasing.

Lastly, Mr. Chairman and Members of the Subcommittee, when it comes to uncomplicated environmental thinking, the elite leadership of the organized environmental movement has somehow overlooked the simple realities of how

these jetties will interact with our environment and how beaches are used by man and other animals. The Oregon Inlet Users Association has correspondence with the American Shore and Beach Preservation Association, which was formed more than 50 years ago with the objective of aiding in the preservation and development of shores for beneficial use by "people in accordance with the ideals of a democratic nation." This information takes to task one of the opposition's principal spokesmen on three aspects of the claims they make concerning erosion at Oregon Inlet:

- Statements about what the jetties will do to accelerate erosion are "clearly fallacious," because the same pattern of erosion can already be observed at Oregon Inlet, and the jetties aren't there yet;
- The proposed sand by-pass system, because it delivers sand of the same size — in fact, the same sand — and deposits it on the same beach, will have no negative effect on beach nourishment; and
- Much of the opposition's base data is of questionable value; and this is the aspect which seemed to interest the scientists from the American Shore and Beach Preservation Association most. Essentially they said that while the Outer Banks may be fragile, they are not as unstable as is usually claimed. Seasonal changes in wave action are more influential upon accretion and erosion than long-term cycles, none of which has been adequately identified. Random surveys, it was felt, "could show anything;" the Corps of Engineers' research pier near Oregon Inlet could provide better data, at least, because a program of systematic, continuous study is conducted there.

33-653 O—84——17

It is large-scale, continuous dredging which adds to the erosion we experience at the Pea Island National Wildlife Refuge. While the barrier island chain may not be as unstable as the opposition says, Oregon Inlet is excessively unstable from the fishermen's point-of-view. Dredging is an unsatisfactory way to deal with this instability, and it should be unsatisfactory to anyone else who cares about the environment of the Outer Banks, fragile or not. Four hundred and fifty acres of the south point, including the Coast Guard station we regard as so vital, and the south footing of the Herbert C. Bonner Bridge, will be gone before the year 2000 without the jetties. I see the change every time I drive over that bridge, or go to the Inlet in a boat. I notice that one of the leading opponents says he has not visited Oregon Inlet in longer than three years. If he took the time, he would, I hope, be heartsick at the loss of land on Pea Island that the delay he has worked for has caused!

Let's face facts. Federal lands do not benefit every citizen of the United States equally, or even in proportion to the taxes they pay; that is a noble ideal. Public ownership of such lands is not now and never has been a meaningful guarantee of public benefit in general. Under the present structure of their management, it is not the owners of these lands — the people of this country — who make decisions concerning their use except within the legal framework you, Members, promulgate. In as fragile an environment as we have on these quixotic barrier islands, the cost of a moment's inattention is high.

Since 1976, when the Magnuson Fishery Conservation and Management Act became law, fishermen have been forced out of their traditional political isolation, and which they prefer, to be thrown in with other constituencies to raise their voice in Washington. By their very history, the environmental establishment has a head-start on us in the places where the future is designed. But in this issue we see two kinds of environmentalists, adherents to two distinct philosophies of environmentalism, locked in combat over two parcels of land where environmental reality does not take a holiday for hearings. Just as the citizen as active beneficiary is something of a fiction, so is the assumption that the fishermen want jetties because of profit. Few people could tell you the difference between profit and management.

We want to manage the fishery, including where it interfaces with the land and the market, for people. A fish is not mine until I land it. To the extent that I am willing to look for it and land it because I can sell it at a profit, I know something that the environmentalists have apparently forgotten: that a resource whose rights are unassigned by man is likely to be abused by man —— look at any abandoned building here in the Nation's Capital.

The Oregon Inlet Users Association urges you, as the nearest thing to the general public owners of the Cape Hatteras National Seashore and the Pea Island National Wildlife Refuge we can ask, to listen to this immutable but less strident voice. The laws of supply and demand are as important to an understanding of Oregon Inlet as the laws of nature —— they are, in fact, the

same laws! Jetties are essential to our continued good husbandry of the fishery because upon them depends our personal and economic survival. Exclusion of what is best management of the waters from what is best for the public lands in this case is a distinction without a difference.

Mr. ROE. Please proceed.

**TESTIMONY OF A PANEL CONSISTING OF GEORGE C. DEEMS, NORTH CAROLINA BEACH BUGGY ASSOCIATION; KEN HUNTER, HARPERS FERRY, W. VA.; HON. MELVIN R. DANIELS, JR., NORTH CAROLINA STATE SENATOR; ROBERT S. DESANTO, COUNSEL TO THE STATE OF NORTH CAROLINA; TERRY WHEELER, DARE COUNTY, N.C.; GILBERT R. "MOON" TILLETT, OREGON INLET USERS ASSOCIATION; HARRY BRINKLEY SCHIFFMAN, OREGON INLET COMMISSION; ARVIN MIDGETT; OREGON INLET COMMISSION; MICHAEL "MICKEY" DANIELS, OREGON INLET COMMISSION; WILLIE ETHERIDGE, JR., COMMERCIAL FISHERMAN, WANCHESE, N.C.; AND MR. DAN McDONALD.**

Mr. DEEMS. Mr. Chairman, I'd like to start off by saying that since this is a hearing on the wetlands bill we'd like to say we have no objection to the wetlands bill itself. Our objection is basically toward the rider that was attached to it.

As far as I am concerned, I have fished the Outer Banks, surf fishing, for 35 to 40 years, and represent a group of mobile sport fishermen that use the surf beach at Oregon Inlet.

We have given a lot of care, attention, and thought to both sides of this problem. Look at the record of what has been studied, and also a visit out on the hopper dredge back in October. We do not want to lose these beaches for recreational use, not only for surf fishers, but many thousands of others both present and future generations. The construction of jetties will just literally wipe out the beaches that all have been using.

NCBBA has joined with a great number of organizations in opposing jetty construction—see list in written testimony. And incidentally to the list you have, you could add the Virginia Wildlife Federation. They have many members who go down to North Carolina to surf fish and other recreational use.

These beaches are almost irreplaceable in the United States because they're used for surf fishing, hiking, crabbing, bird watching, swimming and just about everything in the book.

Often I have looked at the jetty charts by the Corps. I would like to ask the question how old are these drawings?

Voice. They are based on 1975 photography, but the drawings were prepared last week.

Mr. DEEMS. But the photography is 1975. All right. When you look at the designs and you see what will happen to the beaches and what will be lost you start to wonder. We're not against stabilization. Never have been. The difference has been between how stabilization would be obtained. And we've tried to make an honest approach to it.

And I think our approach to this problem should be respected. And we certainly respect their approach.

When you look at the corps own final 1979 environmental statement, the corps estimated from 80,000 to 100,000 visitor days associated with surf fishing on north and south beaches you start to see the large number of people effected. Camper days were listed from 60,000 to 75,000 days a year.

Now, what seems to bother some has been the change of jetty design plans. For about 7 years there was one design that was to do the job. Jetties were shown at 2,500 feet apart.

Then, in May of 1982, they spread the jetties out to 5,000 apart. And also, which nobody's has mentioned, the corps also dropped the height of the jetties considerably. Why?

I was told that one boat that went aground—and with all due respect, we do not care to see loss of life or damage of property at all—that if the jetties had been there the water would have been over them by 4 feet.

Now the corps is back with a third design, and they start building and this morning's testimony brought out that channel conditions are changing all the time.

So the corps decide on 2,500 feet. Then they get it halfway done and the channel changes again. What do they do?

Now, also I'm told, but no one's expressed this in this hearing, that these could be a layer of silt underneath the sand of 20 some feet. I've also been told that there is a peaty mud condition of many feet in the channel that they found in core drillings.

I had one engineer tell me he thought the 30-pound boulders would disappear. The bridge has been settling. And it's on some of the same foundation I think.

You wonder, the fate of these lands that are public lands, where it was wilderness years ago and what it is now, there's not much of it left. Now, the Cape Hatteras National seashore itself is about 90 miles that we're talking about. And part of that is refuge.

What is the fate of thse lands under jetty construction conditions and what might happen. Well, we know in the corps there are experts in certain fields. Now there are other experts and scientists. I think the scientific community is pretty well organized, and they stated that they don't think jetties will work.

And in my testimony I think we referred to the Inman report which to me is a very important document. And here's part of it here. And when you look at see who this group was made up of, of the people that were involved in this study—Dr. Inman of California, and Dr. Kraft of Delaware, and Dr. Dalrymple of Delaware, and Dr. Dolan of the University of Virginia, and what they had to say about the effect of jetties. And in summary, they broke down their report into an attachment which I have there, of short-term implications, intermediate and long term.

And this report clearly states, and I didn't write it, that the jetties would cause serious erosion problems well beyond the project area.

Another important statement is in not only the Inman report, but the study of the economics of Oregon Inlet, which is important to consider. But when we take the scientific viewpoint, also the two State geologists in North Carolina, they don't think the jetties will work at all. One of them says there is going to be another inlet. I think they are honest men, and well known in their profession.

So the scientists are saying this is going to cause trouble for years. And it's all right in the report. Long term, short term.

Plus one other thing in the attachment there that hasn't been touched on is what Dr. Odum of the University of Virginia, in the environmental section, believes will happen, that could happen

very easily in connection with the jetties, and the spawning of fish. This is attachment No. 3.

We recognize fish all go out there, blue crab and so forth, and spawn and then retreat. He says this could just disappear under these waters, the condition of it, temperature and so forth.

Then he says it wouldn't be difficult for a predatory line to get set up at the end of the jetties that might just gobble everything up that came out. So, the study has been made, a very intense study, of what could happen. And the scientific viewpoint is that it shouldn't be done.

Now, as to the benefit/cost ratio, I'm sure I agree with you that it was blue smoke, because that's what the first one was. When you consider the 70 percent error, and it fell to a benefit/cost of 0.034 to 1 which basically meant for every buck you spent you lost 60 cents, I think the American public is interested in a good study. And I believe that if a good study had been turned out some people would have said fine, this is it.

I think the American public is interested in a feasibility study that will give the facts of this; and why it cannot be obtained, maybe they just can't find $400 million over a 50-year period.

I know that there's questions that I have to ask as to this feasibility study. I'll refer to the example of the counting of small boats. I've gone many times to the bridge and drifted back into Davis Sound fishing. We had one surf fisherman tell me they counted one boat 10 times. They set their counters and telescopes on the sound side of the bridge. Mr. Chairman, I said why don't you move to the other side of the bridge, so then every boat going out you know that they used the ocean channel. Because many boats went to the bridge and never went out the ocean channel; they just went there and drifted back. I've done it many times.

But I have fished those beaches for 35 and 40 years, and I stood there and watched the side casters, and they talk about dredging not working. This is water over the dam. I've stood there and watched. It was pumping not sand, I think, but my tax moneys.

They'd pick it up here and I think it'd be back under the boat before they even moved. And I think some of the fishermen agree with this; it was a pure waste of money.

But the hopper dredging is something else, and I want to touch on that.

Now, they also took a survey of some 13 counties of 8,000 boats, and they said they sent the survey to everyone that had a boat over a certain footage. I never received one. I couldn't find any of our members that received a copy.

Now, if they're trying to tell that all these boats are going to leave 13 counties and are all going to come to Oregon Inlet, half of them don't have trailers, it's too far to go and they're too small. I have a real question about this. We could say that every ORV, mobile sport fisherman in the Eastern United States could drive there and use that beach if you want to make that kind of comparison.

Now, I heard a figure the other day of how many recreational boats use this and how many pass this and everything. But there was no source, no where did this come from. I think the question

ought to be asked of where this material was obtained on this, because I haven't seen it.

Then recently in November the corps sent out a study and they followed it up with a statement that the Wilmington District Corps of Engineers is trying to clarify some information previously obtained on the use of Oregon Inlet. They stated "We are not interested in the quantities of fish landed, but only the number of fishing trips you make."

Now, it's hard for me to understand why the quantity of fish that's carried would not be of interest.

We feel that there are some conflicts in the environmental statement that the committee should know. No. 1, it's documented not only in my testimony, but in very many of the impact statements on this project which we have, in writing, not once, but twice, but three times, or four times, that the question was asked would you use Wanchese to endeavor to get the jetties. And the answer was always no.

But that is all I've ever heard since that time. That you had to have the jetties to make Wanchese work. We have nothing against the fishermen at all. But I don't read these statements and say, well, I can just forget them. Because I didn't write them. It was made to the public.

Secondly, there is a feeling in the scientific community that the construction of these jetties are in violation of the spirit of the Barrier Coastal Act itself. Here's a letter here from Dr. Godfrey of Massachusetts at Amherst where he says this very thing. That he feels that this is in spirit a violation of that act.

Of course, the other thing is we don't hear much about how these jetties have performed. Well, actually on the GITI Report No. 19, entitled "Tidal Inlet Reponse to Jetty Construction," October 1981. This was turned out by the U.S. Army Coastal Engineering and Research Division. And they list the jetties and the troubles that they are in. It's a matter of record.

Henry Lyman, who is publisher of the Salt Water Sport Magazine, and I think he knows the eastern coast very well, wrote this part of a letter which is quoted here concerning jetties at Oregon Inlet.

> Concerning construction of jetties at Oregon Inlet, I would look with more favor on such a project if the U.S. Corps of Engineers could show me just one example of success on the east coast of such construction. I am very familiar with the jetties that have been built in the past along this coast, and in every case regular dredging has been required to keep the channels open even after jetty construction. Why spend millions on a system that will never work.

I don't think much has been said about how much is going to be spent for dredging the jetties after they are built. I think it's in the budget for maybe $3 or $4 million.

Now, the hopper has been out there, and we have profiles of the channel, and there's a pretty good channel. And it also took a new course other than what the Corps map shows.

The dredging program was developed by Interior and the Army Corps as the plan to use in hopper dredging. And the profile shows a good channel. Even Storm Dean didn't affect it.

The channel took a new one, direction, at a cost, I think, of $1.7 million. I think that's what the record will show. $1.7 million for

this hopper dredging which built a new channel. The old channel swung to the left. The new one took off past Pea Island.

The record is certainly there of the performance of jetties. You don't have to go very far to find how the jetties perform. We can just go over to Assateague. Here as an attachment is an article out of the Baltimore Sun of what's happening there and how they've filled up.

So you don't have to go very far to find out what happens in a lot of jetty cases. It's documented.

George Reiger in Field & Stream last year made the statement even "if the entire Army Corps of Engineers budget was sunk into a massive Atlantic sea wall from Nags Head to Morehead City, the ocean would immediately begin redesigning the barrier to its own specifications."

The State of Massachusetts, their coastal zone management in March of 1983 turned out a report which I have put part of it in my testimony, of what they say has happened to the jetties in that State and so forth.

One of their recommendations is that you don't add any more, and you might even remove what you've got that's causing so much trouble.

They end up by saying the best way to be spared of the hazards is to avoid developing in areas which are subject to predictable change due to coastal forces and processes.

Now, there's a lot about the loss of income. There is a world of people that use those beaches and hope to use them in the future.

Now, many have said to us, you're going to have some wonderful jetties to fish off of. And part of the testimony that I heard in the past was from an article in the Salt Water Sport Fisherman. I don't think anywhere in the eastern coast we have jetties sticking out in the water the distance that these are; 3,000 or 4,000 feet. And how everybody's going to walk out on them and fish.

I've fished off of jetties and I'm sure other people have, too. Basically it's a sport for some rugged fishermen. And a lot of it is night fishing. I've listed this in my testimony. But here is the article, which I would like to have you look at it more closely, Mr. Chairman. And I wonder what concrete on the rocks will ever do.

Here is the article that was used in testimony as to the value of jetty fishing. We don't think we can substitute any type of fishing like that for what goes on now where people can drive out on this beach and park or walk out from the campground, the young and the old, and fish, day or nighttime.

Now, one of the things that the question is asked, if you had these jetties, and no one will ever answer it for me, who accepts the administrative liability if someone falls in the water and so forth? No one's seemed to want to answer that question.

Take it one step farther, and I don't want to take a lot more of your time, in the study of what land you would lose and how it would affect the beaches, the environmental area is important; I think people are important, too. And they're using these beaches.

I want to touch this briefly. On the use of this land, and the corps say, well, 18, 19 acres. I appreciate the corps bringing these maps. Here the old channel is, as I see it. Now, the hopper dredge came out here. It cut right through. Not where all the side casters

are I stood on these beaches day after day and saw the side casters. But here's the hopper coming down here, dumping the sand 17 feet.

Even the superintendent of the park said it's looked like Pea Island is building up. I think it's working.

Now, in other words, we fish here, all along this shore line. But here, all this. Here's the ramp where you come out. And they tell me that there can be this disposal all along here maybe for a couple of years. You try driving on disposal.

If you're coming out here. Here's the campground. And this is going to be cut way down, and the Army says this themselves. I'll touch on that.

But down here's the coastline and everything. Here's some of the most productive spots you can have in surf fishing. And the experts say that this will go when the jetties are built.

Now, if we're talking about a channel, are they telling me we're going to have 4,000 feet, and here is a channel in the middle? It doesn't start adding up as far as my book is concerned.

But, going back to this statement which is taken from their own material, during the operation of the sand bypassing portion of this project, significant portions of the beach on Bodie Island and Pea Island will be utilized for placement of the soil discharge.

The impacts shall not be insignificant as most of the sand bypassing operation will probably occur during the peak visitor season. Now, this is people again.

And a lot of people are going out there. Even the Army says we've got 80,000 to 100,000 surf fishermen a year out there.

The construction phase entails fencing off from visitors perhaps 350 acres. All area south of the campground. In other words, from that camp down. And then they talk about only losing a few acres.

And this will go one—in other words, 350 acres on Bodie and 14 acres on Pea during a 3-year construction period that you're not going to get out there.

Now, they say also they're going to be designed to be safe or they're going to have to be closed up.

Visitation figures for Pea Island Refuge, down here, and here's the North Point, because there's a point involved in this.

In 1976 the figure was 1,646,075 people; 711,000 were wildlife oriented. The northern end of the refuge gets most of the public use, and this is the area that probably is most adversely affected by the jetties. And we go on here. Now, the lands between north jetty and inlet, exceptional environmental area for nesting and feeding of marine life. Disturbance of bird life in this area during the construction is certain.

However, construction of the northern jetty will lead to eventual loss of prime bird feeding areas.

All right, here we go to the camp. Within a few hundred feet of this construction, yes, sir.

Mr. ROE. Will the gentleman yield? We're desperately short of time. And we want other people to be able to present their view, too.

Mr. DEEMS. Right. The last point I want to make is they say here's 3,300 vehicles that can't use this beach. You can go somewhere else. Well, look at the island now. When you get down to the

figures of 1976, there was 2,196,000 people who used these beaches. 371,000 went to the visitor's center. We take those off. When you read this report, which, I hope you will, you begin to see that this project affects a lot of people.

In conclusion, certainly, we want a good stabilization of the inlet for the fishermen and we want the beaches. Now, we've only tried this hopper dredging for a short period of time, and it shows that it can be done.

Side casters forget what went on in the past. But one of the simplest answers, I think, would be to get in there and be serious about this hopper dredging. People have been told they couldn't even get in. I have proof of this: You can't get in there. They're too deep. This isn't true. Right down the row, no the hopper won't work.

Well, I don't know whether they didn't want it to work or what. Don't misunderstand me, but I think it's a good solution at the present time to be able to get in there with a hopper dredge and let's see if it will work.

Now, if we build the jetties and they don't work, what in the world are you going to do? They're 30-ton boulders. Who is going to get them out? So why gamble with this?

Thank you for your time.

Mr. ROE. Senator, I know you have to catch a plane.

Senator DANIELS. Thank you, Mr. Chairman, you're very kind. Members of the committee, if I may for the record, I am Melvin Daniels, a native of the island of Roanoke Island, just outside of the Oregon Inlet area.

While my family doesn't go back to fishing 400 years, they go back to 1730. And I'm the only one of my generation who broke that and didn't follow the sea.

I am a member of the North Carolina Senate for the last decade. My district, Oregon Inlet is exactly in the center of the district.

I am a member of your created South Atlantic Fishery Management Council under the Magnuson Act, and I now serve as chairman of the Southern States.

I would be remiss if I did not congratulate you on the Public Law 94-265, the Fishery Conservation and Management Act of 1976, which as you well know, extended the jurisdiction of the fisheries out to 200 miles.

And there I would deviate and go to Oregon Inlet.

The Fish and Management Act created a series of seven national standards and we're particularly grateful for those. No. 4, conservation and management measures shall not discriminate between residents of different States. If it becomes necessary to allocate or assign fishing privileges among various U.S. fishermen, such allocation shall be fair and equitable to all such fishermen. Reasonably calculated to promote conservation, carried out into such a matter that no particular individual, corporation or entity acquires an excessive share of such privileges.

We also under that act, as you well know, allocate surplus fish to foreign nations.

You asked very wisely, and we appreciate that earlier today, something about the history and geography of the area. Just a few miles west of Oregon Inlet is a fishing village called Wanchese.

One of North Carolina's largest fishing fleets are located there. A few decades ago these vessels were vessels of some 40 feet, perhaps 50 feet in side. The rivers and sounds of our States, as in many States, became polluted. The fish fled. Our fisherman had to turn to the sea for their livelihood.

As they turned to the sea they attempted to do so in small vessels. They could not compete some two decades ago with the foreign nations. They were using vessels in the 100 to 200 foot length. And many mother ships. Our fishermen found that they were faced with a series of three things and were trying to compete with shallow draft vessels.

Your shallow draft vessels could not be effective in hull time or fish gathering capacity. They could not be effective costwise in trip time. They could not remain at sea due to fuel.

But most important, and a point you've touched on so wisely today, was the safety aspect of weather. These small vessels could not weather the storms. They had to come in.

Perhaps a decade and a half ago the Carolina fisherman became extremely aggressive. They moved into vessels of the 65 to 120 foot length. They are now known as sea rovers. You will find them on any given day off the sea scallops banks off of New England or the shrimp beds off the gulf.

They move well. They cannot come back to their home port many days of the year. When Oregon Inlet is stormy or closed, they will not bring their cargo in. They're going elsewhere if they can get in.

As they made the transition to the deep-water vessels, it became apparent that we were losing resources still by attempting to use shallow draft vessels because the allocation of squid to Spain and Portugal, brown fish to Norway and the Scandinavian countries, thin fish to Poland and others, Tuna to Japan, all of these are still going to nations that are using larger vessels with long trip time.

The American fisherman—and I think one thing that hasn't been brought out today, Oregon Inlet is not an inlet for North Carolina fishermen alone. It's a port of refuge for our American fishermen. Many times when they can get in the inlet you'll find vessels from many States in there.

These vessels are requiring, I'm told by the experts—the experts haven't testified yet; they're the fishermen.

These vessels are requiring 12 feet or in the general area of that of depth. If they're loaded as Captain Tillett told me earlier, they have to have that 14 foot of water to get across the bar.

They can't do this. We in the South Atlantic Fish and Management, we in North Carolina—let me deviate a minute to say that North Carolina, and I hear this suggested by some people, every agency in North Carolina supports permanent stabilization of Oregon Inlet. Our Governor has testified; our U.S. Senators; our congressional delegation. We passed in the North Carolina Legislature complete support resolution in both houses. Local government supports it.

We think that the Corps of Engineers on Oregon Inlet are the experts. They don't use academic theory. They are desiring to take anybody's favorite beach fishing hole away, but they are looking out for the safety and interests of the American fisherman.

I know I'm taking too much time. You've got a lot of people. But I just want you to know that North Carolina is backing permanent stabilization. We feel that we have an obligation to our fishermen who in many areas do not have—you know, North Carolina is a farm State. We have great tobacco programs for farm interests. We've also got some good fishermen. And we feel that we don't have any parities, any price supports or any PIK programs, and if you give us deep water, you give us deep water, and we'll hold our own.

Mr. Chairman, I thank you. And we appreciate your interest in our folks.

Mr. ROE. Thank you, Senator.

Mr. DeSanto, counsel to the State of North Carolina.

Mr. DESANTO. Thank you very much, Mr. Chairman.

I also certainly appreciate the complicated nature of this decision before you. You described the subcommittee as performing the service of a Solomon, I certainly am sensitive to the delicate nature of the decision you have to reach and the conflicting testimony which you have and undoubtedly will gather.

I am Robert S. DeSanto and I am chief scientist for DeLeuw Cather Co., a Washington, D.C. based-consulting firm. I received a bachlor's of science degree from Tufts University and a doctorate degree from Columbia University in 1967.

I have not submitted to you a written statement. I will read mine. It's as carefully timed as I can, and it should not exceed 5 minutes.

At DeLeuw Cather, I am responsible for all the envirnommental analyses and guidance and mediation which may arise separately from or as part of the various engineering projects which that large firm undertakes.

I've been practicing as a full-time and as a professional applied ecologist in industry since 1972 before which I taught as a college professor. I've been involved in many aspects of environmental management, and particularly with respect to problems associated with proposed development in the coastal zone.

My native State, by the way, is New York, but since graduating I've lived in Connecticut, and am familiar with the coastal problems of the Eastern United States in particular.

In addition to my responsibilities at DeLeuw Cather, I am also founding editor and chief of an international scientific journal which is published every other month entitled "Environmental Management"; and also, the technical book series called Environmental Management, which are both published by Springer-Rolag, a very large international firm with primary offices in New York, Heidelburg, and Berlin.

I am also chairman of the National Academy of Sciences Transportation Research Board's Subcommittee on Environmental Mediation. And a great deal of what you said this morning certainly related to the principles of mediation.

In all these respects I have sincerely tried to devote my career as I am doing now to foster prudent environmental stewardship. And I think that's very much what you were saying this morning.

The congressional record, which is being developed on this proposed Oregon Inlet project is not only complex; and I'm speaking of

the record before the Senate as well as the House. It's also highly emotional.

And that emotion, I think, is certainly understandable. But it really makes a rational evaluation of this proposal, much more difficult than it might otherwise be and perhaps that's the real world.

Such a charged atmosphere, especially relative to claims by some of dire environmental consequences, is likely to create a misleading basis from which you have to seek to make a judgment on the real merits of the proposed project. And I am particularly upset by statements which I have read and have heard from scientific colleagues who also inject a considerable portion of emotion into their findings and their recommendations, which I think it totally out of place.

Therefore, I was very recently asked by the Oregon Inlet Commission to help by reviewing this record and by preparing written testimony which would offer my perspective of the facts and of the fancies which the record shows, and to try to do that without confusion of mixing emotion and judgment.

I am familiar with the environmental aspects of the proposed Oregon Inlet project and with its implications. I believe that it can be a prudent and environmentally safe project notwithstanding that it is certainly large and complex.

Therefore, my intention is to devote the next several days to preparing written testimony in support of this belief which I would submit to you within the next 10 days.

My purpose today is to introduce myself as I've done and also to outline the bases of the problems and of its solution from my perspective as a scientist and as an environmental manager.

With that perspective, I believe the following: First of all, the dynamics of this coastal erosion and accretion of Oregon Inlet is great, and any manmade system, whether it be continual dredging, jetties, or any other as yet undefined system, if one exists, that if it is used to modify the process, the natural processes, it must be so carefully designed and carried out that there is no possibility for significant oversight.

In this case there clearly is no margin for serious error.

The second is that the fund of scientific understanding and the related practical experience which complements that understanding, is available to undertake the proposed Oregon Inlet project. It is great, and the necessary technology certainly exists, or can be developed to create, to implement and to maintain the proposed project.

No organization, no individual has more site specific information or experience than does the Corps of Engineers. And furthermore, sand bypassing does work, and it does so elsewhere. We have to be careful to define the particulars of the system, and we have to apply them specifically to Oregon Inlet, and I have complete confidence that the Corps of Engineers is obviously the logical, the safest, group to make a recommendation, based on both science and on experience. The Corps of Engineers does have a rather large body of extremely competent scientists. There is no magic cloak that one puts on on one side of the door or the other.

Third, the cautions which I have read and which I have heard against this project expressed by people at these hearings and else-

where and by many in the scientific community seem often so emotional and subjective as to make it impossible, at least impossible for me to separate probable fact from a philosophy or viewpoint which simply does not accept environmental management as a safe means of solving large or dynamic problems such as we face at Oregon Inlet. And I disagree very strongly with this view.

In particular, I disagree with the allegations made that the Corps of Engineers cannot model, design, and implement a successful jetty stabilization project at Oregon Inlet. The experience of the corps at that very site spans more than 20 years, and the principles developed there and elsewhere for, first of all, sand bypassing systems, second, floating breakwaters—and of course the concept of floating breakwaters is not new at all. They occur in New Jersey, Connecticut and every other coastal State in the Nation. The difference is that in this case we have a very dynamic system, and the scale of the design and the criticality of the design and its application is very important. But the fundamental principles exist.

Third, beach erosion and accretion processes, the experience with those processes is certainly unmatched by any other group or individual. Of course, caution must be used to insure that the net long shore drift of beach sediment after the project is no less than that which existed before the project and that single event storms will not overpower the beaches so as to reactivate or perhaps create new inlets.

The corps is fully aware of these cautions and has the experience and skill to design a project able to meet strict criteria for sound environmental management at the inlet.

I believe that those of my colleagues who are opposed to this project should indeed require answers to all the serious concerns they have and that perhaps through some form of environmental mediation all parties can arrive at a point of mutual respect and support.

However, in this particular instance, mediation, I think, will be difficult, since contrary views have already been taken and are set in perhaps, if I am permitted, the term "bureaucratic concrete."

The Department of Interior has approved as far as I know the final environmental impact statement relative to consideration for accommodation to rare and endangered species, presuming the project as prescribed would be implemented. And furthermore, that the corps' mitigation plan within that impact statement was also accepted.

Furthermore, in hearings before the Subcommittee on Fisherines and Wildlife Conservation and Environment, August 3, 1983, in a statement submitted on behalf of the Department of Interior, entitled "Compatibility Statement Regarding Issuance of a Department of the Interior Permit to Construct Jetties and Place Dredged Soil on Pea Island National Wildlife Refuge", that submission concludes in the final paragraph with a sentence which I read here isolated from the context, but I believe it is consistent and certainly understandable, as follows: "Our assessment is that these detrimental effects will take place even if the Corps is able to carry out the project as planned."

In other words, it would appear from this conclusion that negotiations on modified plans based on the Army's proposal are preclud-

ed. Perhaps that's not the case, and I believe Mr. Potter certainly suggested that it was not the case. But the fact is the record is contradictory, and the diplomatic difficulty of overcoming that contradiction may be great.

Whatever the outcome of the hearings, I believe based on what I have reviewed, my conversations with those expressing views for and against, and my personal knowledge that this project is both scientifically and engineeringly feasible. And I look forward to providing the subcommittee with my written testimony. That concludes my remark.

Mr. ROE. Thank you very much. Mr. Hunter.

Mr. HUNTER. Thank you, I have a prepared statement for the record which I will summarize.

Mr. Chairman, you expressed concern about the continuing year after year costs of a continuous dredging program, and I would agree that when you get up into these several millions of dollars annually, it's a rather alarming thing to do in the face of $200 billion annual Federal deficits.

But somehow in all the talk of sand bypassing that went on today, there was not a reiteration of the information that was given to the Interior Subcommittee last week to the effect that the corps now estimates annual costs for the sand bypassing to be $4.7 million; that's up a bit from the $4.3, I believe, that had been estimated some while ago.

So, for the record, over a 50-year project's life, you will have a cost of $235 million, just to move sand that's built up on one side of the jetty around to the far side of the other jetty.

You also can learn some interesting things from listening to the testimony as I have been doing. Could we put the chart back up that shows the 14-foot depths?

Mr. Vallianos suggested that in 1978 and 1979, and I assume those are the 2 years that we see there working back from the right, in green, 1978 and 1979 they did have channel depths in there in excess of the 14 foot authorization. That's very interesting, because the fishery began to show some dramatic increases in catch that carried through 1980 and 1981, and even into 1982.

The catch in 1979 which is the second, I take it, without having gone up and looked at it, the second of those two green blips there that show more than 14 foot channel depth, the catch in the landings, to use the phraseology, the "landings" of seafood brought into Dare County in 1979 was 35 million pounds of fish. In 1980, which is getting into the red rather substantially there if I'm reading the chart right, the landings were 41 million pounds of fish, and that stands as the all-time record for Dare County.

1981 still is very much in the red there. The landings were down to 39 million pounds of fish in Dare County. And in 1982, which was by the time I had begun to get involved in this and was reading clippings from the local newspapers, it was a disastrous year. And you've heard testimony that it was terrible, the kind of flak that the Corps of Engineers was getting from the fishermen about the conditions in the channel.

Nevertheless, in 1982, Dare County landings were 32½ million pounds of fish.

This contrasts very interestingly to the projections that the Corps of Engineers made in its economic analysis for what you could expect to happen after the jetties were built in regard to the "traditional" fish that have been characteristic of the Dare County fishery.

And they said that after the jetties were built that you could expect 22½ million pounds. That's 10 million pounds less than that rather poor 1982 year, and 18 million pounds less than the 41 million pound record of 1980 which, according to that chart, was a year in which you never had depths through the channel of even 14 feet.

And yet we have had testimony that this fishery requires a 20-foot-deep channel to be viable.

Now, that was one part of the economic analysis. The other part was the "blue smoke" part. And that concerned "nontraditional" fish, so-called nontraditional because American fishermen have not been particularly involved with these fish which are caught further at sea and had been used, almost exclusively by foreigners and had been taken in quite large quantities by foreign fleets off the Atlantic Coast.

However, as it turned out, not quite far enough south to be of tremendous economic viability to a seafood industrial park that was being planned at Wanchese, N.C.. And that's where the "fundamental error" that the Assistant Secretary of the Army, Mr. Gianelli agreed I had discovered took place.

The fundamental error concerned wrong information about the size of the foreign fleet in 1976 within two arbitrary geographic sectors of the ocean. And the corps said that foreign fleets had caught in that area. those two areas, 350 million pounds of fish.

The official records of the North Atlantic Commission, the International Commission on the North Atlantic Fishery were one third of that within those two sectors. And as far as Oregon Inlet is concerned, that only began the start of the problems with the data. Because the corps neglected to superimpose what they had stipulated to be a 160 mile radius of commercial feasibility for making utilization of these nontraditional fish.

Well, that picked up essentially all of the lower sector and only "a small portion" of the next sector up. And so you kind of have to arc off a corner out of the southwest part of that sector and add that to this lower sector.

Astonishingly, the full sector which would be within the commercially feasible range outside Oregon Inlet, the foreign fleets in 1976 caught only 7 to 9 million pounds of fish. I am probably being generous in adding another 11 million pounds of fish out of this southwestern small portion sector, section, piece, portion of the next sector to the north, and rounding off to a 20-million-pound catch within the 160-mile radius of feasibility that the corps had stipulated to. This means that there was an error in the economic data of 330 million pounds of fish and it's that, that affected 70 percent of the value of all the benefits that had been identified for this project. That is why, in the summer of 1982, when I turned in my findings to the Army Corps of Engineers, and they took a look at it, it seemed to me that they were starting from a 0.34 to 1 benefit/

cost ratio. And that means a $400 million hole—deficit—in a $600 million 50-year life cost project.

Since the new economic analysis is not expected out until the end of June, it would appear they're having some difficulty climbing out of this hole.

So I was particularly interested in noting Secretary Summers' statement where on page 3 he talks about the jetty stabilization allowing, and this is his first point that's listed there, an additional 20 to 25 million pounds of fish landings per year.

In contrast to the kinds of landings the Corps had been talking about in this "non-traditional" fish scenario, this is pretty slim pickings because they had projected peak year landings in the early 1990's of squid, hake, sea herring, mackerel and butterfish of 144 million pounds of fish.

So this would appear to be a shortfall of about 120 million pounds from that projection. The decline after the peak years plateau out in about the second half of the 50-year life of the project at 70 million pounds of these fish. That would be in addition to the 22½ million pounds of "traditional" fish that they thought they'd be bringing in.

This was going to be America's pioneering venture in the utilization of "nontraditional" fish. And the fish weren't there. And that's why they're in trouble with their economic justification. And that's why the taxpayer should be concerned about "blue smoke" in this project. There sure was a lot of "blue smoke," Mr. Chairman, and I'm glad I found it.

Mr. ROE. Mr. Schiffman.

Mr. SCHIFFMAN. Yes, sir. Mr. Chairman, and committee members, I would like to submit my testimony for the record as well as a separate list of some erroneous statements by the opponents with corrections and references to the documented corrected answer, with your permission.

Mr. ROE. No objection, so ordered.

Mr. SCHIFFMAN A huge thank you goes to you and your committee for the sincere in-depth and truth-seeking manner in which you're conducting this hearing. We much appreciate it.

Mr. Chairman, people from all over the world venture to Oregon Inlet for recreational boating, and often are unable to go off shore. Due to shoaling, our Coast Guard station is no longer able to accommodate its own boats.

Numerous boaters have discontinued operation in the area after scary trips through the inlet, as it remains treacherous and continues to threaten numerous livelihoods as well as the recreational avenue for millions of people.

Even so, at least 3,000 private boats with an average of four people aboard, used Oregon Inlet for at least 2 weeks last year. This computes to 168,000 people, boat trips.

One could easily expect this to double, to well over a third of a million people, people boat trips per year when Oregon Inlet is stabilized. I know the feeling of returning from 50 to 60 miles off shore only to find it unsafe to transit the channel, and bearing the responsibility as concerns the safety of people and a several hundred thousand dollar boat.

Do you go for it? Do you go 60 miles further to the south knowing that you're going to be marginal on fuel? Or do you ride it out?

I'm here to tell you that all options have been tried, and none are very appealing. Those remaining of the commercial fleet who dare navigate Oregon Inlet are faced with these decisions constantly. Unfortunately, some never make it.

The *Darana R* grounded in Oregon Inlet under calm sea conditions following a storm which apparently shifted the channel. After numerous attempts by Coast Guard boats, the Army Corps of Engineers dredge *Schweitzer*, and trawl boaters to assist the *Darana R*, I was asked to assist with our tug, *Lookout*.

She grounded in the channel which is part of this project. And try as she might for some 11 hours, we were unable to proceed to assist the *Darana R*.

Salty Dawg Marina is a dry stack and wet slip marina located 11 miles from Oregon Inlet. It is the type of facility that is a packed house situation in all coastal areas where a safe inlet is within range.

Two years ago, our marina was at one-third capacity. And due to even more publicity about the dangers of Oregon Inlet, our rental spaces have dropped 45 percent from that.

In 1952, the National Park Service set up a very large area for the enjoyment and recreation of the general public. Their stated intent was to assist, protect, and cooperate with the local people and communities in every way, even though some 70 miles, or 30,000 acres of very prime ocean front property was taken for this project at a bargain price of $1,236,000

The U.S. Corps of Engineers has studied this project in more detail than any previous project of a similar nature. They state that only via a dual jetty system and some annual maintenance can Oregon Inlet be stabilized and that a sand bypass system must be incorporated in order to assure no adverse effects.

Rather, to reduce some of the effects of accelerated erosion already in process. And, how often does one have a coastal engineering research facility within a few miles of proposed project, which we have.

A recent survey indicates the loss of 2 feet in depth in less than 30 days where the hopper dredge was working, and also some loss in width. Trying to dig and redig and watch conditions worsen lacks understandable logic. The simple economics of 200 trawl boats or more making 26 trips per winter multiplied by an average trip of $10,000 gives us a total raw revenue alone of $52 million. This does not include any associated business benefits, nor does it include the potential business benefits of all other businesses that would prosper from the increased flow of people and revenues.

Basic economics can easily justify the stabilization of Oregon Inlet without the necessity of more studies. A 42-percent unemployment in the winter and spring of 1983; the reduction of a commercial fishing fleet from 200 boats to less than 20; the closure of our only metal shipbuilder, all four electronics firms, and the first tenant of the seafood industrial park. Immense damages to the charter boat fleet and the recreational boating industry by the infamous reputation of Oregon Inlet. Losses being incurred by the

State of North Carolina in a nonactive seafood park costing some $8 million.

A national wildlife refuge threatened by accelerated erosion and the ill effects being felt by every business in coastal North Carolina. These are a few reasons we request your support.

This project of Oregon Inlet, Manteo Shallowbag Bay has been overstudied. From engineering circles, environmentally, and economically this is a sound project. For the people of North Carolina's Outer Banks and adjacent coastal communities, as well as those from afar, the time has come for your assistance in making this possible.

Please, if you have any doubts whatsoever about the project, come to Oregon Inlet and see for yourselves.

Mr ROE. We may just do that.

Mr. SCHIFFMAN. Thank you, Mr. Chairman.

Mr. ROE. Mr. Midgett.

Mr. MIDGETT. Mr. Chairman, just as my colleague here complimented you, I want to do the same thing. We have appeared before some committees that were not, well, in my opinion, not telling tales out of school, but in any rate, that I didn't see the interest and the commonsense and the attentiveness displayed that you gentlemen have. And I certainly appreciate it for everybody here.

I would like to summarize somewhat from my written statement that you have for the record. My name is Arvin Midgett and I'm a charter boat operator from Oregon Inlet down on the Outer Banks of North Carolina. I'm also a member of Dare County's Oregon Inlet Commission from Manteo, N.C., and I know that I speak for a lot of people down there, not just myself or my charter boat friends, but for recreational fishermen, small commercial fishermen, big commercial fishermen, just about anybody that uses Oregon Inlet, I know that I can say some things for them.

The message I would bring to you is not one that requires a lot of time. I'm not going to bore you with a lot of figures and facts that I'm not really qualified to give in the first place, but I just want to appeal to you with a sincere and basic message that we really need help.

I mean, we can't do the thing ourselves. We have to, in this case, be dependent on you people. It's a job that has far more scope than we can handle. If it were something we could do ourselves, we're used to work, and some hardship, and some chances. If it were something we could do ourselves, we wouldn't be up here bothering you about it.

In the many years that have gone by, at least 40 since people from my area have been trying to get Oregon Inlet made better, why the effort and the expense and the study and the paperwork, and if you could measure time that's been put in this project, certainly it would fill this room up with paperwork alone, I'm sure, not counting the anguish that's been involved.

Sport fishermen, like myself and many of my friends, have been working out of Oregon Inlet for over 50 years now, and they're still waiting, and waiting, and hoping for what hasn't come yet, what was promised, what we thought was coming when we got into this situation, but that which we don't have, and that is deep, safe, wide inlet to pass through to open sea.

We learned a long time ago, way back in 1970, that this was coming. But it's not there yet, and we're still sitting there hoping, groping and waiting.

I operate a 46-foot sports fishing boat out of Oregon Inlet fishing center, just a mile, maybe a mile and a half north of the channel through this bar. And with the exception of the narrow little cut through the inlet now that the hopper dredge made and which I hope is being maintained, it may not be by today. hen the whole inlet is very narrow and treacherous and shallow and dangerous to try and go across.

As a matter of fact, a boat that draws very much water can't go across anywhere except through this one little cut. And it's particularly dangerous to those boatmen that use it every day, experienced boatmen that go back and forth through there hundreds of times each year.

You can imagine how dangerous it is to the visitor and the stranger who is coming down the coast. There's a lot of people using this inlet that are not familiar with it every day that are in a whole lot more danger than they can imagine. Some of them are finding out the hard way.

From this marina that I operate from, there are probably 50 vessels in the marina, three more than we usually—we've got three more now that we hadn't had till lately and that, as my colleagues have told you, the Coast Guard has had to move three of their vessels over there. They can't get back to their station any more because of lack of stability and shifting sands in the channel.

Now, of these 50 vessels that are operating out of this marina, fully 35 this summer will be charter boats, which I run, and they are going to charge a fee of like $500 daily to take people out to the Gulf Stream fishing. There are 35 vessels times an average of 125 trips per season per vessel; that generates well over $2 million annually.

Now, if we had a deep, stabilized inlet, we could expect considerably more boats, I imagine, in time. And more trips that would be sailed because we wouldn't lose so many down days. I call it, because of a rough inlet, and this amount of revenue we just have to increase.

From our standpoint this is certainly desirable, and should be from everybody in the country. For us, again, the proximity of Oregon Inlet to the fishing grounds like to the commercial fisherman is vital. What we're fishing for is the type of fish that you don't catch in close. We're fishing for Gulf Stream varieties like marlin, dolphin, tuna, mackerel and things that are caught, most of our fishing is done like 30 to 40 miles from our inlet. And we can't operate out of anywhere else.

We live there and our business is carried on from there. We can't go through another inlet way distant up or down the coast to go where we have to go. We've got the closest fishing grounds for Gulf Stream type fishing north of Florida. And, we've been blessed with a short trip to it, if we can use the inlet, and with some really good fishing that people come from all over to fish for.

It amounts to a lot of people each spring, summer, and fall.

The recreational boating that is taking over there, of course it started out a little slow back in the old days, but with the smaller

boat becoming more complete for a long offshore trip, and fairly safe, neat rig, there's a lot of small recreational fishermen who are using this inlet as a passage out to the Gulf Stream, too. And they're not using other places because of the distance to the Gulf Stream.

Besides running a charter boat in the summer, I take hunting parties in the winter, and I'm just as environmentally aware of what's there and how it needs to be preserved as anybody. But I've got to make a living, too, and people have to carry on what they have to carry on. And they want some safety, and there's a lot of things that can be said for stabilizing and jettying Oregon Inlet, and in my opinion it wouldn't harm the environment one little bit.

In many cases, I can see how what has happened already to Oregon Inlet has helped the environment, and has helped wildlife. We're not damaging anything that I see. We're not molesting the turtle.

Just the other day when the inlet was kind of choppy, not very bad, really, I stopped on top of Oregon Inlet bridge and looked out at the condition of the inlet as it is right now, and there was an opening through the main bar where breakers were not breaking that I could have gone through with my 45 foot boat. But if I had deviated just one little bit either way from that dredge cut, that maybe there this summer and it may not be there this summer, then I don't know that I could go through there, certainly not with any degree of safety day in and day out.

I'm particularly concerned about safety. I take many times family, women, and children are among the group, and we leave, and the inlet may be fine, not too much wind, and of course we keep abreast of the forecast. But we could get out there 50 miles, and have a sudden shift of wind that came a half a day earlier than it was supposed to be, and I'm kind of in a tight situation and worried about it a good part of the day.

I have left several times this past summer, earlier than I would have left to make sure that I beat out a changing weather pattern that was coming. It's not really very comfortable, and certainly not very safe.

I won't take any more of your time. I know you're thinking about us, and I hope you'll do all you can for us. If time did permit, I would go on and on and on about improving the quality of the water in eastern North Carolina by improving Oregon Inlet or improving my area recreationally by improving Oregon Inlet, or lessening the chance for blow out, I'll call it, by a hurricane in our area by improving Oregon Inlet.

But these things will be considered by other people. You likely have them in mind anyhow. Again, I don't see any harm, if everybody really looks at it as to what, as to how much good it can do as opposed to what little bit of discomfort and harm it may cause for a very small minority, why I would just have to give H.R. 3082 a yes and full steam ahead in my book, and I thank you.

Mr. ROE. Let me ask this question, we're running behind time again: How many others do we have? Are there other people?

Voices. Yes, sir.

Mr. HUNTER. Mr. Chairman, do you have any questions for me? I have to leave soon.

Mr. STANGELAND. I have one before Mr. Hunter leaves. What is your connection, with this project, Mr. Hunter?

Mr. HUNTER. I don't represent anybody, Mr. Stangeland. I'm a lobbyist without portfolio. I was a lobbyist for the Coast Alliance, which got me into an interest in barrier islands. I grew up in a beach community in Florida. I could tell you about an inlet down there that they jettied and still have troubles with. But I'll save that by submitting it for the record.

Mr. STANGELAND. You're just trying to be a friend of the court?

Mr. HUNTER. Well, I've gotten a bit more involved than your ordinary friend of the court. I do not represent any client, but this is something that particularly caught my eye, as to the kind of wasteful, counterproductive things that we have tried to do over and over again on the coast in hardening various parts of the barrier islands.

So I began investigating it and I was astonished, Mr. Stangeland, as to what I found about this particular project. I invite your intensive inquiry as well.

Mr. ROE. We're going to have to recess for no longer than 20 minutes, and then come right back.

[Whereupon, a short recess was taken.]

Mr. ROE. The subcommittee will come to order.

Mr. McDonald, you had a flight. Why don't we start with you.

Mr. MCDONALD. Thank you, Mr. Chairman.

I'm Dan McDonald, a resident of Raleigh, N.C., a professional civil engineer, a retired officer in the U.S. Army Corps of Engineers, retired employee of the State of North Carolina, and a part-time consultant.

My knowledge of the Manteo Shallowbag Bay project comes largely from my service as the State's project manager in the Wanchese Harbor Development Project from 1976 to 1982. My primary responsibilities were project funding, planning, design, and construction.

My duties in that capacity required that I acquire and maintain a working knowledge of the Manteo Shallowbag Bay project. I'm speaking now as a concerned citizen, and on behalf of the Dare County Board of Commissioners, the Oregon Inlet Commission, and the Oregon Inlet Users Association.

I would like, Mr. Chairman, to define the project in a little more specific terms than it has been defined. The Manteo Shallowbag Bay project was authorized by the Congress for construction substantially according to recommendations contained in House Document No. 91-3003, 91st Congress, 2d session, April 8, 1970.

The project recommended in that document and specifically authorized by the Congress was: (a) Stabilized Oregon Inlet with a dual jetty system; (b) improve existing navigation channels through the inlet and on to Wanchese Harbor and Manteo Shallowbag Bay; (c) enlarge and deepen the basin an Wanchese.

Now, the authorizing document designated the Secretary of the Army acting through the Chief of Engineers as the responsible agent for implementing the project in accordance with the plans and subject to the conditions recommended by the Chief of Engineers.

Now, since authorizing the project, the Congress has made several appropriations for planning and design. The Corps of Engineers have made extensive studies of the authorized project, and the possible alternatives.

Since 1978, the Congress has appropriated a total of about $14 million for project construction. One element of the project has been constructed. In 1979, the State of North Carolina enlarged and deepened the basin at Wanchese Harbor under a written agreement with the Chief of Engineers.

The cost was $510,051 and the Corps of Engineers has reimbursed the State for this construction work.

Now, further construction is stymied by the nonavailability of certain land required for project construction and maintenance, which land we have been told already is under the jurisdiction of the Department of the Interior.

I'd like to point out that the position of the Department of the Interior was clearly stated in a letter dated September 9, 1980, from the Assistant Secretary of the Interior for Fish and Wildlife and Parks to the Assistant Secretary of the Army, Civil Works.

That letter included three statements. One, the Department is unable to issue a permit to the corps for construction of a project that utilizes jetties. Two, we believe it is necessary for the corps to obtain additional authorization from the Congress, including the appropriation of park and refuge lands before the project may proceed.

Three, the most appropriate means of conflict resolution is further explicit action by the Congress.

Now, title IV of H.R. 3082 is consistent with that stated position of the Department of the Interior. It simply proposes congressional authorization for the Corps of Engineers to use the lands in question as necessary to implement the project authorized by the Congress in 1970.

Now, Mr. Chairman, in simplest terms, the problem at Oregon Inlet is sand in the channel. The solution is to keep the sand out of the channel. To the extent that the channel provides navigation for the using vessels.

The question is how this can be best accomplished. Now, much of the argument of this question has been on an emotional plane where objective analysis is barred.

May I focus for just a moment on four basic questions that are central to an objective examination of the project. One, is there a public need for the project? Two, will the project planned satisfy that need? Three, does the public need for the project, along with projected benefits, justify total project costs? And four, what impact will the project have on the environment? And how does this impact relate to project benefits?

Now, with respect to questions one and two, the need for reliable navigation through Oregon Inlet has been clearly demonstrated over and over, and it's been dramatically emphasized in the loss of lives and property.

Commercial fishermen have proven the potential capability of Wanchese as a major seafood port. Strengthening our Nation's commercial fishing industry is a national requirement; it is not in

a healthy state, with the possible exception of the Pacific Northwest.

Support for this industry at Wanchese is an important step in the strengthening process. There is definitely a public need for a stabilized Oregon Inlet.

Now, after years of study and experimental research, the Corps of Engineers has concluded that a dual jetty system will provide the needed stabilization, and that dredging is not a viable alternative.

I believe this is a sound conclusion as opposed to the argument that dredging is a desirable alternative.

With respect to the public need for the project and the cost benefits, or the cost and the benefit, the need for a stabilized Oregon Inlet is acute. The projected benefits are significant. The total project costs are high.

Now, there is no way under the Sun to put these three facts into a computer and obtain a universally acceptable answer to whether the need and benefits justify the total project cost.

As you have so rightly pointed out, Mr. Chairman, we are saddled with questionable ground rules for arriving at the so-called benefit cost ratio for the project. And regardless of what it was from any computation of a benefit cost ratio, the result will be challenged and probably argued in perpetuity.

Rather than argue statistics, I prefer to advance the proposition that enhancement of our commercial seafood industry which is a major objective of this project, is of vastly more importance to our Nation's welfare than for example the doling of tractors to rice farmers in Vietnam, only to have them mire up and rust.

I believe that there is a primary need to help our own people, in this case, our commercial fishermen, who are working hard to keep their industry alive.

With respect to environmental impact of the project, I consider myself an environmentalist in the true sense of the word; that is, I am dedicated to the projection and wise utilization of our natural resources. But I am not qualified to engage in the academic rhetoric that often prevails in addressing this project.

As a practical engineer, I view much of this rhetoric as being quite ridiculous, and I question the underlying reasons for it.

In summary, I would reiterate my conviction that the Manteo Shallowbag Bay project, when constructed as authorized by the Congress, will satisfy the need for a stabilized channel through Oregon Inlet.

This is not a pork barrel welfare, or food stamp project. It is a project that will enable a goodly contingent of our Nation's commercial fishermen to not only make a living for themselves, but also to contribute materially to our Nation's commercial fishing industry, and thus to the economy in general.

Now, let me point out that this project offers a golden opportunity for members of the academic world to write papers and gain coveted publicity, and they have. It invites attacks from groups and organizations hellbent on furtherance of their special interests.

Mr. Chairman, I hope you will critically examine the real motives behind these expressions of opposition, and that you will test the validity of the arguments being advanced.

In his ark building project, Noah probably had to contend with such critics and criticism. But the ark was built, and I believe that Noah's severest critics probably had to admit in the end that the project was worthwhile.

This concludes my remarks.

Mr. ROE. Had he not done it, we would be short of a few elephants today. [Laughter.]

Mr. MCDONALD. Thank you, Mr. Chairman, for this opportunity.

Mr. ROE. Mr. Wheeler?

Mr. WHEELER. Mr. Thomas Gray, who is chairman of North Carolina Seafood Industrial Park Authority, and a member of the Dare County Board of Commissioners, was unable to be here today due to being snowbound in Norfolk.

So he has asked me, with your permission, to present his testimony to you and summarize it.

Mr. ROE. Fine. The complete statement will be included in the record.

Mr. WHEELER. My name is Terry Wheeler. I'm an assistant county manager for Dare County.

The county's economic stability and the future of our community and many of our citizens is based directly on stabilization of Oregon Inlet, and the inlet is not stable.

In the 1940's Dare County's people began to push for an increase in the channel dimensions at Oregon Inlet, recognizing the need for a greater ocean fishery and the opportunity of access to the sea that Oregon Inlet provided.

Oregon Inlet lies close to the second richest fishing grounds on the entire east coast, as migrating fish from north and south pass within just a few miles of the coast. As ocean fishing methods became more sophisticated, boats from as far away as Florida and Texas, New England and Canada began to fish the waters off Oregon Inlet. They all realized what our local fishermen have long known: The waters are rich.

The push for stabilization continued and picked up speed with increasing support from the out of area users of the inlet. In the 1960's the Corps dredged the channel constantly but hard winter storms could close the channel over night, resulting in devastating damage to boats still offshore which attempted to reach port.

News articles from those years speak increasingly of damaged trawlers, of loss of revenue when landlocked trawlers were forced to wait in ports for dredges to reopen the channel, of sunken ships, of personal injury and even death.

In 1970, after years of study, Congress authorized jetty construction at Oregon Inlet by passing the Rivers and Harbors Act. The channel at the ocean bar was to be 20 feet deep by 400 feet wide, with a 14-foot interior channel to provide the ocean access needed by the growing fleet of commercial boats based up and down the coast.

Part of the project included provisions already for field by the State of North Carolina to expand the harbor at Wanchese and provide for a prototype seafood industrial park. That park opened in 1981 and now sits idle, its first and only tenant having closed down some months ago.

Other tenants expected to locate at the park this year will concentrate on shellfish processing, an industry that is dependent on inland sounds, rather than the unstable waters at Oregon Inlet for success.

Other effects of Oregon Inlet include an unemployment in Dare County last year of 42 percent, that's the highest in the State of North Carolina, and maybe the Nation.

I have heard opponents of the project refer to the natural beauty of our coastline and of the physical degredation that the jetties would represent. I have heard Mr. Deems who speaks for the North Carolina Beach Buggy Association assert that the jetties will ruin the beaches of the Cape Hatteras National Seashore.

With all due respect, I must challenge Mr. Deems' supposed sincere concern about erosion. I cannot help but feel that his and his organization's concern is no more than selfish interest.

The beach buggy membership is primarily drawn from other States which do not have a vested interest in the stability of our beaches.

No one could argue with the damage done by the ORV, the four-wheel drive recreational vehicle that churns up the shorelines of our coast.

If Mr. Deems is truely concerned about erosion and about the pure and natural look of the coast, then why does he not suggest that to the Park Service that all vehicular driving on the beach be banned.

Thank you.

Mr. ROE. Just for the record, the statement was made that the reason the seafood park development shutdown was not based upon the point of view—at least that's the interpretation—was not based upon the point of view of the channel problem, but the fact that the fish weren't there. Do you have anything to say to that?

Oh, do you want to speak to that Mr. Daniel?

Mr. DANIEL. Yes, sir.

Mr. ROE. Let's go to Mr. Etheridge first, and then you picked that up.

Mr. ETHERIDGE. I can answer that question. No, sir, the fish were there. They shutdown that park because the boats couldn't get in and out; the larger boats couldn't get in and out.

They also had a shipyard in there where they hulled the boats that was in business, and that had to go out of business. We had another shipbuilder over on side of it, and he had to go out of business.

We had another shipbuilder over on side of it, and he had to go out of business. This is a heap worse than a lot of the people here have written here about it.

Mr. ROE. Is there any way that we can get, the fellow that went out of business? Could you get a communicatcn from him saying that the reason he went out of business was because he couldn't get the use of the channel?

Mr. ETHERIDGE. Yes, sir.

Mr. ROE. Would you do that for the record? Let's have that letter. That would be helpful.

[The letter referred to follows:]

ROANOKE ISLAND STEEL & BOAT WORKS, INC.,
*Beaufort, N.C., February 13, 1984.*

SUBCOMMITTEE ON WATER RESOURCES OF THE COMMITTEE ON PUBLIC WORKS AND TRANSPORTATION,
*U.S. House of Representatives, 2253 Rayburn Building, Washington, D.C.*

GENTLEMEN: In reference to a request by Mr. Roe, following is an explanation concerning the problems Oregon Inlet caused our business and our subsequent move to Beaufort, North Carolina in December 1983.

During the first five or six years in Wanchese, a fair portion of our business stemmed from repairs performed to local and transient trawlers. Though Oregon Inlet has always been hazardous to navigate, it was not then the problem it has presented to vessels in the past 2 to 3 years. No longer do the large numbers of distant based trawlers utilize Wanchese for offloading their catch or even as a safe harbor in a storm. Even the local fishermen have been utilizing other ports to avoid the inherent risks of bringing their boats home. As a result, repairs have fallen to a very small percent of our total business.

We have always had to consider access to Wanchese, with the depth of the Inlet and interior channels questionable, when presented with invitations to quote on projects involving large vessels; vessels we were capable of building or servicing but perhaps incapable of traversing to our from Wanchese. A case in point would be the 122 foot combination tuna seiner/fishing trawler which we have under construction and subsequently have towed in a light condition to our new location in the Beaufort-Morehead area. Had we finished the vessel in Wanchese, we would have had to run it down the Pamlico Sound to exit through Beaufort Inlet—about an extra 30 hour trip—in order to undergo sea trials as traversing Oregon Inlet would be too big a gamble. The vessel would have had to take the same route again for its delivery trip home.

The advantages to us to relocate to an area with a deep water ocean access as well as an intracoastal access far outweighed those of remaining in an area with questionable access and thereby a questionable future.

Sincerely,

CARL BOCK, Jr. *President.*

Mr. ROE. Go ahead.

Mr. ETHERIDGE. What I have to say is mostly about the local fishing, and I don't really care to talk a whole lot about it. If it's all right with you, we're running short on time, I'd be glad to answer any questions, and I'll submit the thing to you so you people can read it.

Mr. ROE. Fine.

Mr. ETHERIDGE. I've been around there about 50 years and I've learned to respect the Army Corps of Engineers. What they tell you is right. We hear a lot of flak from other people, but that's mostly what it is.

Mr. ROE. Fine. Your statement will appear in the record in full.

I think we've established what the issues are and so forth. I know you've come a long distance, but what I'm interested in is if there's something additional you can add. You've had the chance to listen to all the testimony back and forth—is there something else you see?

I think Colonel McDonald summed it up quite well. Now, do you have anything Mr. Daniels?

Mr. DANIELS. I would like to show you on the chart where Mr. Hunter said the squid, weren't there. Only four boats right here worked. From July to November they caught 2 million pounds. Right here, within 30 miles of Wanchese.

Mr. ROE. I see.

Mr. DANIELS. See what happens, you have people talking to you who don't know nothing about fishing. That's all we are is fisher-

men. We know where the fish are, and we know how to catch them. People like that don't know what they're talking about.

A total of eight boats, it was 4.6 million pounds.

Mr. ROE. Can we keep this?

Mr. DANIELS. In my paper, I give you all a copy.

Mr. ROE. Oh, it is in there? And your statement will be made part of the record in its entirety.

Mr. Tillett, do you have something further?

Mr. TILLETT. I've prepared a statement for the record. I'm the owner of three trawlers, and what Mikey just said, is what I was going to say—our opponents say we did not have the fish. But we did. I had one boat packed 1 million pounds in 3 months. And stayed home weekends.

And the past week, we have packed over 200,000 of fish they said we couldn't catch. Hake, squid, and mackerel. And they say we don't have it.

Essentially going to these bigger trawlers, we're having problems getting in and out, and which most of my fish, squid last summer, had to be carried to Virginia because of shallow water. We couldn't come in and unload it.

That's why we need jetties. I just believe in the Corps of Engineers. I think they're right.

Mr. ROE. Very good. Mr. Tillett, we also have your statement which has been made a part of the record.

Mr. DANIELS. Another thing they're saying, you know, we're 10 million pounds over. I mean, give us a jetty and see what we can produce. It's like you tell a man to dig a ditch with his shovel. He can do it. Put a backhoe there and see what he can do. He can go twice it that there.

That's what we need. We're just up against a wall. I've had to move my fleet of boats out and go to Norfolk, rent a building with no electricity, take a generator, truck boxes, ice, and all this stuff just to attempt to keep my operation going. It's just a shame that stuff like this happens, and you all are the best people we've been to.

I really appreciate you. You're very receptive.

Mr. ETHERIDGE. I was there when we started this. They are talking about trying hopper dredging, continue dredging. Hopper dredging is what opened this up in the beginning. And we wore out the hopper dredges. They could not keep us going. We had trouble up inside and the hopper dredge couldn't do it.

So they built these side caster dredges. This is since we began our operation there. And last year they had all three of their hopper dredges in and they just couldn't keep it open.

So, it's just a circle, from hopper dredges, to side casters and back to hopper dredges. That's the way the whole thing has been going. And they didn't want to bring it out.

Dredging is no alternative, no, sir.

Mr. ROE. Let me tell you what the situation is. You've been very patient. We appreciate that. We have to get through our testimony today to get into the issue in depth, so the committee understands it.

This is a very good committee and they know what's going on. Make no mistake about that.

The second point is that the jurisdiction, as I understand it, and correct me if I'm wrong, that bill originated in the Merchant Marine Committee. It was sequentially referred to this committee and sequentially referred, as I understand, to the Interior Committee, who are having hearings today.

In fact, somebody told me just a few minutes ago that the Interior Committee is talking about going down there this week.

Did any of you testify before Mr. Seiberling's committee?

Mr. SCHIFFMAN. Yes, sir.

Mr. MIDGETT. Yes, sir.

Mr. ROE. OK. So what the problem before us at the moment is—and a lot of the testimony today gave us background—to allow the corps to build on the land that's under the jurisdiction of Interior. So that's in effect what the bill would do.

That issue does not particularly get into the other matters, the matters we discussed today. In other words, if that bill were to pass and the Interior Committee and the Congress approved the bill, then the Corps of Engineers would be able to go ahead on that subject to some of the other work they're doing on environmental impact statements and so forth. And also the Appropriations Committee.

So there's where that stands. I think that there's been a very telling testimony today and it seems to me fundamentally that if there's going to be any viable fisheries resources at all in that area, that the jetties have to be built.

Now, the question is, in the Interior Department, whether there is some adjustment that can be made in the process. If you notice, most of the testimony in my judgment today not only was emotional in some points, but it got to the issue of whether it would work or not.

And it seems to me if you're going to go in and get operated on for a brain tumor, well the surgeon's either going to do it or the patient is going to die. One or the other.

So somebody's got to make the decision is what I'm trying to get at. And we'll pursue in that direction because we have to have our determination's out by March 1.

So we will move with dispatch. I think your testimony has been very substantive, and then we'll get on with it from there and see what we can do to try to resolve the matter. OK?

I want to thank you very much for coming today.

The subcommittee is adjourned.

[Whereupon, at 4:47 p.m. the subcommittee was adjourned.]

# ADDITIONS TO THE RECORD

## WRITTEN TESTIMONY, DR. ROBERT S. DE SANTO, CHIEF SCIENTIST, DELEUW, CATHER & CO.

The essence of the environmental testimony entered in opposition to the proposed Oregon Inlet jetty and sand bypass system alleges that the proposal will cause significant loss of land up-coast and down-coast of the inlet. Of less apparent importance, but none-the-less cited as an environmental concern by at least two witnesses, is their belief that fry fish, and other estuarine organisms, might be swept or directed by the proposed channel into deeper waters than would otherwise be the case. They allege that such a possibility would cause those shallow water organisms to fall prey to other organisms from which they would otherwise be protected.

Socio-economic considerations of this proposed project are not considered here since those facets must not confuse the evaluation of probable ecological impacts. The social and political decisions about this proposed project must be made with the benefit of advice on the scientific aspects from bona fide witnesses. However, those who testify must not confuse their own political or social views with their appraisal of the science of the proposal upon which they offer their opinion. It appears that those offering testimony in opposition to the proposed project have mixed interpretations of science with the political and socio-economic aspects of their testimony. The testimony offered here is focused only on the ecological and environmental aspects of the proposal and on the doubts which have been raised about those aspects. In that respect, the prospects of significant erosion, accretion, and associated physical aspects of inlet stabilization, are well known. Furthermore, the relevant principles of physical oceanography and coastal zone mechanics are not in dispute here.What is in dispute centers on conflicting judgments related to whether or not the specific design for the stabilization of Oregon Inlet will work, and whether judgments made by the Corps of Engineers relative to channel depths and methods of maintenance are correct and best suited to the problem of hand.

Relative to the physical aspects of the proposed project, opposition testimony was entered which claimed that jetty systems used to stabilize dynamic inlets do not work. This is not correct, based upon both the scientific literature and the experience of field engineers working with the evaluation of such jetty systems. The Kieslich report entitled, "Tidal Inlet Response to Jetty Construction," was improperly interpreted because it evaluated single jetty systems and it did not deal with sand bypass systems. Therefore, it is misleading and inappropriate to suggest that that study weakens the proposal for a dual jetty system in conjunction with a sand bypass system at Oregon Inlet. In fact, testimony which deals with a partial solution to an inlet stabilization problem is misleading. A partial solution will not work, is not acceptable, and is inappropriate to use in judgment of the Oregon Inlet proposal. Such misleading testimony demonstrates an incomplete understanding of the fundamental and inseparable aspects of the Oregon Inlet proposal.

Not only must the jetty system itself be evaluated, but the acceptability of that system must be judged in combination with the proposed sand bypass system. There seems to be no dispute that both systems must function satisfactorily if the inlet is to be stabilized and if coastal erosion is to be prevented. However, erroneous claims in the record are made which allege that no successful jetty systems and sand bypass systems exist. Indeed, many do exist throughout the world, but selecting an example for appropriate comparison with the Oregon Inlet proposal naturally narrows the field considerably. Probably, the best comparative example is the Channel Island Harbor jetty and sand bypass system in California. There, a dual jetty system, on a high energy coast, is maintained in conjunction with a dredge-operated sand bypass system. A stone breakwater parallels the shore on the updrift side of the jetty behind which a dredge removes sediments. Periodic dredging totals between 1,000,000 and 3,000,000 cubic yards of sand a year. This compares with the

500,000 to 600,000 cubic yards of net sediment transport which are estimated to be the dredging requirements at Oregon Inlet in order to prevent downdrift shore erosion there. The fixed breakwater at Channel Island Harbor is equivalent in function to the proposed Sloping Float Breakwater at Oregon Inlet.

Considerable objection has been entered into the record relative to the proposed Sloping Float Breakwater relative to its experimental and allegedly unproven design. It is acknowledged that the design of this feature is not yet final. Therefore, it seems that the real question raised by some of those opposing this project is whether or not the Corps of Engineers can develop a Sloping Float Breakwater which can work at Oregon Inlet. I see no individual or group with more or better information, experience, or capability to successfully undertake such a task. Attached to this testimony is a much abbreviated list of references which lists some of the past work the Corps has used to help in the design and testing of the breakwater design being evolved. The type and perfusion of such studies and preliminary design documents represent a state-of-the-art effort which will work from a scientific and engineering framework.

I believe that the Corps of Engineers can design the prerequisite floating breakwater. However, whatever the final design, an overall project perspective must be maintained from which the objective of that design can be borne in mind. A breakwater was proposed in order to increase the efficiencies of the project by allowing the dredge to work with less dependency upon naturally nominal sea conditions. Dredging could thereby be undertaken in a larger window of time than would otherwise be the case. Working in such a protected environment, the dredge could remove between 500,000 and 1,000,000 cubic yards of sediment per month. The floating breakwater at Oregon Inlet was proposed in answer to concerns that a fixed, stone breakwater parallel to the beach would be an eyesore. The proposed Sloping Float Breakwater is being evolved as a prototype unit created as a result of a powerful engineering effort. Nevertheless, success of the stabilization of Oregon Inlet does not depend on that breakwater. It depends on a dual jetty system and a sand bypass system. The breakwater makes a part of the bypass system more efficient. The overall concept of sand bypassing is made more flexible and foolproof by incorporating the proposed Secondary Sand Bypassing System which allows for the subaerial removal of accretion fillets impounded by either the north or south jetties. This proposed system was operated near Oregon Inlet in 1971, and involved the transfer of approximately 300,000 cubic yards of sand from the exposed cuspate foreland at Cape Hatteras northward for a distance of about 3.5 miles to the beach at the Town of Buxton.

Based upon my consideration of these facts, I believe the proposed sand bypass system is unusually redundant. That is, the dredging necessary to insure success in passing the modeled or empirically derived volume of sand past the proposed jetties, or into the bay if so desired, could be accomplished by a combination of established or new dredge methods. Success, therefore, is not dependent upon any one unique system, and the proposed system is dependable, as a whole.

Relative to the concerns expressed in the record for ecological impacts of aquatic life resulting from the proposed project, there is no substance in the literature or in the record of this project which suggests that a real problem is probable. The proposed system is designed such that there would be no volumetric difference, or chemical (i.e. salinity) change between the present estuarine system and one in which the proposed jetty system were present. It appears that the natural populations of organisms in the Oregon Inlet area are inherently variable and that the currents and turbulence there are such that statisitical analyses is not helpful in making a reliable prediction. A sufficiently long record of baseline data does not exist. Nor would it be possible to collect the necessary scientific data in less than many seasons of study. However, a judgement relative to probable impacts of jetties on aquatic organisms can be made through our consideration of studies from other systems. Such studies of a jetty system on the west end of Padre Island, (Aransas Pass, Texas) were performed by Copeland and others in the sixties. The purpose of those investigations was to shed light on the movements of various aquatic organisms (i.e. fauna) passing through that jetty system which was approximately 1,000 feet longer than the proposed system at Oregon Inlet.

There is no evidence in the literature, or any other source of information of which I am aware, which suggests that the presence of a jetty system as proposed at Oregon Inlet may have any negative impact upon aquatic life cycles in the area. This conclusion is further supported by work of Applied Biology Inc., as represented in its October 1980 report entitled, "A Literature Review for the Assessment of Larval Fish and Shelifish Movement through Oregon Inlet and Potential Effects of Inlet Stabilization by Jetties."

The suggestion that estuarine organisms would be swept into deeper coastal waters, if the jetty system were implemented, and that such a consequence would negatively impact those populations currents and volumes within the bay and at the mouth of the proposed jetty system would be essentially unchanged whether or not the jetties were constructed. The differences created by the project are limited to the jetty-protected inlet channel. Those changes of channel depth and stability would have no significant effect on the movement, viability, and general ecology, of entrained organisms as compared with the present physical and biological circumstances which exist there. The theroretical questions which may be raised to the contrary are curious and fanciful but they are not based on the slightest bit of fact.

SELECTED REFERENCES

Kieslich, James M. 1981. Tidal Inlet Reponse to Jetty Construction. CITI Report 19. U.S. Army Corps of Engineers, Coastal Engineering Research Center, Fort Belvoir, VA., and Waterways Experiment Station, Vicksburg, MS.

Copeland, B.J. 1965. Fauna of the Aransas Pass Inlet, Texas. I. Emigration as shown by Tide Trap Collections. Publ. Inst. Marine Sci., University of Texas. 10:9–21.

Copeland, B.J. and M.V. Truitt. 1966. Fauna of the Aransas Pass Inlet, Texas. II. Penaeid Shrimp Postlarvae. Texas J. of Sci. 18(1): 65–74.

Hoese, M.D., B.J. Copeland, F.N. Moseley, and E.D. Lane. 1968. Fauna of the Aransas Pass Inlet, Texas. III. Diel and Seasonal Variations in Trawable Organisms of the Adjacent Area. Texas J. of Sci. 20(1):33–60.

Leenknecht, D.A., J.A. Earickson, and H.L. Butler. Numerical Simulation of Oregon Inlet Control Structure Effects on Storm and Tide Elevations in Pamlico Sound. Working Draft. U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

U.S. Army Corps of Engineers. 1977. Shore Protection Manual. Vol. I-III.

Carver, R.D. and D.D. Davidson. 1981. Technical Report, HL-80. Jetty Stability Study Oregon Inlet, North Carolina Hydraulic Model Investigation; Hydraulics Laboratory, U.S. Army Engineer Waterways Experiment Station. Vicksburg, MS.

Ocean Surveys, Inc. 1981. Final Report, Seismic Reflection Profiling, Oregon Inlet, North Carolina, P.O. No. DACW54-81-M-3377, P.O. No. DACW54-81-M-3643. Prepared for the U.S. Army Engineer District, Wilmington, NC.

Jones, D.B. 1978. Flexible Breakwater. Technical Note N-1351. Naval Civil Engineering Laboratory, Port Hueneme, CA.

Jones, D.B. 1978. An assessment of Transportable Breakwaters with Reference to the Container Off-Loading and Transfer System (COTS). Technical Note N-1529. Port Hueneme, CA.

Raichlen, F. 1981. Experiments with a Sloping Float Breakwater in Water Waves—Phase I. Prepared for U.S. Army Engineer District, Wilmington, NC.

Babcock, C. and M.C. Cheung. 1981. Failure Analysis of the Sloping Float Breakwater—Final Report. Dr. Maxwell C. Cheung and Associates, Newport Beach, CA.

Clark, G.R. and T.W. Richardson. 1982. Designs for Secondary Sand Bypassing System, Oregon Inlet, North Carolina, Hydraulics Laboratory, U.S. Army Waterways Experiment Station. Vicksburg, MS.

U.S. Army Corps of Engineers Committee on Tidal Hydraulics. 1965. Evaluation of Present State of Knowledge of Factors Affecting Tidal Hydraulics and Related Phenomena.

Tait, R.V. and R.S. De Santo. 1974. Elements of Marine Ecology. Springer-Verlag New York, Inc., New York City. 327 pp.

De Santo, R.S. 1978. Concepts of Applied Ecology. Springer-Verlag New York, Inc. New York City. 310 pp.

De Santo, R.S. 1980. Environmental Stewardship. Environmental Management, 4(1)-1.

---

STATEMENT FOR THE RECORD BY VINCENT FOGLIANO, VICE PRESIDENT, FAIR FISH CO., FULTON FISH MARKET, NEW YORK, N.Y.

Mr. Chairman, Members of the Subcommitee: Fair Fish Company is one of the half-dozen or so largest wholesale fish dealers in the world-famous Fulton Fish Market in New York City. We share this centralized fish market with approximately fifty other fish dealers who sell to restaurants, chain groceries, supermarkets, processors, and retailers. We employ twelve at Fair Fish Company, and I assume that each of the other dealers in the Fulton Fish Market has a similar number of

employees dependent on work at his establishment, so perhaps 500 people work here directly in fish wholesaling.

At Fair Fish Company, as at a number of the other fish dealers', we buy regularly from the fishermen and fish packing houses of the Pamlico Sound area of northeastern North Carolina. During some times of year, these fishermen are in a natural position to supply fish steadily when other American fishermen report that they are landlocked by winter weather or by other factors. Because consistency of supply is vital to any wholesaler, we rely on these North Carolina fishermen at times like that.

Most fish dealers are more aware of the problems and needs of their customers than those of their suppliers, the fishermen. Most of the time, we at Fair Fish Company are typical in this respect. But in the past three or four years, we have become increasingly aware of a problem our fishermen suppliers from the Pamlico Sound area of North Carolina have because it has adversely affected our ability to supply fish to our customers consistently and at predictable prices.

The fishermen frequently blame the problem on "the Oregon Inlet situation" when we telephone them for fish—we can't tell in New York City what the weather is like or channel conditions are in North Carolina. To us, as to them, a day without fish to sell is a day that can never be recovered. To our customers, the lack of supply may be even more influential. While there is some "slinky effect" in the pipeline, seafood, perhaps more than any other commodity, is time sensitive. If there are no fish because of "a blow" at Oregon Inlet, and then the weather improves and the boats can get in, prices become volatile and virtually uncontrollable. I have seen prices for the same species and the same grade double from one day to the next; and triple from the beginning of the week to the end of the week.

The modern American consumer is little aware and cares less about the route by which food arrives on his supper table. But he is aware of changes in price and availability of supply, and his eating habits are based on a generalized sense of the stability of a market. A restauranteur will leave fish off his menu altogether if he cannot count on a steady supply at a predictable price. One of the reasons the chicken industry has been taken over by such giants is because they have mastered market fluctuations by centralizing; chicken is always plentiful and inexpensive.

Most of my customers and most of their customers will never visit the Federal recreational lands at Oregon Inlet. Like all urban dwellers, we value and appreciate recreational facilities because we know that they are there for us to use if the occasion arises. But our lives are affected by other forces as well as the impulse to travel and vacation. The breadth of life is best experienced in the home and with the family—and now perhaps I betray the bias that comes from being descended from Italians—it is as important to be able to afford to feed our families from a bountiful and varied table.

It seems to us when we find environmentalists opposing projects like the one at Oregon Inlet which the fishermen need so badly, that if these so-called experts had their way in all things, life would become dull, safe, and impoverished. This cycle of scarcity and abundance also wastes resources. Fish that cannot be sold because of a glut following a scarcity cannot alleviate the scarcity in any way, and must be thrown away. This meddling by environmentalists in an otherwise orderly, if unpredictable marketplace acutally costs our resources dearly.

Left to their own initiative and independence, with the government's technological assistance at Oregon Inlet they require, the fishermen would be able to manage their resource well, moderating scarcity and abundance, ending waste and leveling market forces. We feel that it is important to keep in mind during your deliberations a fact that has been little spoken of in this debate: it is the fishermen who contribute more meaningfully to the quality of life than the outspoken but unsympathetic daydreamers who oppose them at Oregon Inlet for abstract intellectual reasons.

Therefore, we respectfully urge you to report Title IV favorably.

Thank you.

---

DEAR MR. CHAIRMAN: Would you please see that this comment is added to your subcommittee's record on the Oregon Inlet jetties legislation.

Thank you.

WANCHESE, N.C.
*Feb. 4th, 1984.*

TO WHOM IT MAY CONCERN, in my opinion, the only way to ever have a permanent deep water channel in Oregon Inlet is by building jetties.

I base this opinion on more than forty years experience in the Maritime Industry, during which I have entered and departed from many, many successful jettied ports and inlets.

DEWEY E. MANN, JR.,
*Panama Canal Pilot.*

---

TESTIMONY ON H.R. 3082 AS IT RELATES TO THE MANTEO (SHALLOWBAG) BAY PROJECT

My name is Orman Mann and I am chairman of the Dare County Oregon Inlet Commission and a member of the Dare County Board of Commissioners. My family has owned and operated a hardware and grocery business in Wanchese, North Carolina, for the past 22 years. My personal economic stability and that of my community and many of the constituents I represent is based directly on the stabilizing of Oregon Inlet.

And Oregon Inlet is not stable. In the 1940s, Dare County's people began to push for an increase in the channel dimensions at Oregon Inlet, recognizing the need for a greater ocean fishery and the opportunity that access to the sea through Oregon Inlet provided. Oregon Inlet lies close to the second richest fishing grounds on the entire east coast, as migrating fish from north and south pass within just a few miles of the coast. As ocean fishing methods became more sophisticated, boats from as far away as Florida and Texas, New England and Canada began to fish the waters off Oregon Inlet. They all realized what our local fishermen have long known: the waters here are rich. The push for stabilization continued, and picked up speed with increasing support from out of area users of the inlet.

In the 1960s, the corps dredged the channel constantly, but hard winter storms could close the channel overnight, resulting in devastating damage to boats still offshore which attempted to reach port. News articles from those years speak increasingly of damaged trawlers, of loss of revenue when land-locked trawlers were forced to wait in port for dredges to re-open the channel; of sunken ships, of personal injury, sometimes of death.

The most recent tragedies at Oregon Inlet involving loss of life have hit recreational fishermen, as unwary pasengers have been swept overboard by heavy seas in the inlet or have fallen as a private or charter boat slams into the bottom or lists heavily in its attempt to navigate the passage.

In 1970, after years of study, the Congress authorized jetty construction at Oregon Inlet by passing the Rivers and Harbors Act. The channel was to be 20 feet deep by 400 feet wide to provide the ocean access needed by a growing fleet of commercial boats based up and down the coast then fishing at Oregon Inlet.

The nearby port of Wanchese was designated a harbor of refuge, in recognition of its proximity to the offshore resources and in acknowledgement of the large number of domestic and foreign vessels fishing the coast. With enactment of the 200 mile limit and other federal incentives designed to encourage development of America's offshore fishery, the stabilization of Oregon Inlet assumed new importance. Part of the project included provisions already fulfilled by the state of North Carolina and Dare County to expand the harbor at Wanchese and provide for a prototype seafood industrial park which would increase the amount of catch that could be handled at one time. That park, opened in 1981, now sits idle, its first and only tenant having closed down some months ago. A second tenant expected to locate at the park this year will concentrate on shellfish processing, an industry that is dependent on the inland Sounds and not on the unstable waters of Oregon Inlet for success.

Our own fishermen, and others up and down the coast, expanded operations during the late 1960s and early 1970s, especially after Congress authorized jetty construction. They opted to take advantage of the federal tax incentives for new vessel construction and built larger, deeper draft steel trawlers. It is these boats, built with full expectation of the fulfillment of the federal promise to stabilize Oregon Inlet, that have not been able to pass through Oregon Inlet in recent years—except during daylight hours at high tide with calm waters. Even then, they still run a risk of going aground.

The loss to Dare County and eastern North Carolina has been devastating as more and more boats forsook Oregon Inlet as an access point for offloading their catch in Wanchese. Old businesses have failed; others have laid off workers, reducing operations, while still others, like my own, have been forced to absorb revenue drops as high as 50 percent compared with past years. The North Carolina Division of Marine Fisheries statistics tell the story:

| | Pounds | Value |
|---|---|---|
| September 1980–April 1981 | 23,747,726 | $9,037,222 |
| September 1981–April 1982 | 17,502,888 | 8,006,769 |
| September 1982–April 1983 | 12,342,290 | 5,495,936 |

These figures, compiled for the Northern District by the North Carolina Division of Marine Fisheries, over landings of fin fish caught offshore. Not only are our home ports affected, an unstable Oregon Inlet also affects the prices set by such national suppliers of seafood as Fulton Fish Market in New York City. Boats which continue to make the run through Oregon Inlet are often forced to return early when bad weather threatens; fishing trips are also cut short to accommodate the inlet conditions and to enter port at high tide and during daylight hours. Those boats that will not use Oregon Inlet face a minimum of 10 to 12 additional hours of travel time on the water before they can offload their catch and negotiate for its sale to market. This valuable time lost often denies the fishermen the most productive fishing times of just before and just after a storm. Many boats return without a full hold or delay their trip out to meet the necessary inlet conditions.

Unstable conditions at Oregon Inlet lead to unstable conditions in our nation's prime fish markets, hurting the entire American fishing industry. Supply is often erratic, for the reasons mentioned above, and the fishermen themselves often pay the toll in lower prices for their catch while consumers are later forced to pay higher prices to offset those times when fresh catch is unavailable.

Fish dealers af Fulton's Fish Market have estimated that the majority of the catch of fin fish marketed during the winter months of November-March comes from the North Carolina fishery located within a 60 mile radius of Oregon Inlet. Stabilizing Oregon Inlet would stabilize this national market and would provide increased opportunities for additional harvesting of catch by American boats, no matter where the catch was offloaded; investment in the Wanchese Seafood Industrial Park would surely boost the local economy, providing more than 500 year-round jobs to an area whose winter unemployment hit the state high of 42.5 percent during the winter of 1982-83. The park would also help to increase the market for processed catch as a precentage of fish landed would remain to be packaged and shipped directly from Wanchese-based industry.

Some say dredging is a viable alternative for stabilizing Oregon Inlet, the jetty construction project is simply not needed. We have 24 years of dredging history to counter this argument. Oregon Inlet has been dredged for years and has repeatedly shifted position and shoaled, especially in times of high winter northeast winds. While the most recent effort to deepen the channel at the ocean bar by a small, private contract hopper dredge appeared to meet with some success, several points must be remembered. The most recent survey by the Army Corps of Engineers, dated January 10, shows a TWO FOOT LOSS IN DEPTH AT THE OCEAN BAR since the December 29, 1983 survey. It is true that the channel appeared to be in better shape than it had been in recent years when the hopper dredge ceased work at the first of the year, but the channel had not yet withstood the hard northeast winds that have consistently caused shoaling. Two weeks of winter weather, with prevailing north winds, has resulted in a loss of depth and some slight loss of width. If shoaling continues at the rate it has followed so far in January, mid-February will find the channel impassable

The hopper dredge, even while working in conjunction with corps sidecast dredges, was not able to fulfill the authorized dredging dimensions of 14 feet by 400 feet; it came nowhere near fulfilling the conditions authorized under the 1970 Rivers and Harbors Act. Moreover, many boats are running around in shallow waters west of the Herbert C. Bonner bridge which spans Oregon Inlet. The stabilizing jetties will prevent the sand which is now free to wash into the channel from being swept into these interior channels during a flood tide. Jetties will minimize shoaling west of the bridge as well as on the ocean bar.

Dredging has proved itself over time to be no more than a here today, gone tomorrow solution. Fishermen such as Jimmy Rhule who trusted his vessel to the dredged conditions which prevailed at Oregon Inlet on one day have had a rude awakening when their boats hit bottom on the next day in the marked deep water channel. Additionally, corps studies show intensive dredging will result in catastrophic erosion on adjacent Pea Island—lands that we all wish to see preserved.

Dare County deems the stabilization of Oregon Inlet to be of such prime importance that it created a special commission, the Dare County Oregon Inlet Commission, a year ago to devote its full time and energy to resolution of our problem.

We respectfully request your favorable posture on H.R. 3082, and especially on Title IV of this legislation, which will give the Corps of Engineers the management rights over the acreage needed to construct the jetties. Use of these lands is absolutely essential for continuing the Congressionally authorized project, with its resultant benefits to Dare County and North Carolina economy and to the American fishing industry as a whole.

---

NORTH CAROLINA BEACH BUGGY ASSOCIATION, INC.,
*Nags Head, N.C., February 14, 1984.*

Re Oregon Inlet "Rider" to H.R. 3082 Emergency Wetlands Resources Act, Hearing February 7, 1984.

Hon. JAMES J. HOWARD,
*Chairman, Committee on Public Works and Transportation, 2165 Rayburn House Office Building, Washington, D.C.*

Hon. ROBERT A. ROE,
*Chairman, Subcommittee on Water Resources, Committee on Public Works and Transportation, B376 Rayburn House Office Building, Washington, D.C.*

DEAR CONGRESSMEN HOWARD AND ROE, We wish to thank you for the opportunity to testify in opposition to the Oregon Inlet "Rider" attached to H.R. 3082. We thought the hearing was handled in a very proper manner, however I feel I should make the following statements:

1. Since the hearing was held, I was greatly disturbed to find that the two maps used by the Corps of Engineers were approximately seven years old and in my opinion did not show the correct location of the alternative dredging now being carried out. We have marked the 3rd jetty design as to where we believe the correct position of the present dredging to be. See attachment No. 1.

2. The Corps of Engineer's charts on Depth of Dredging show clearly that the hopper dredge Mermentau dredged a very good channel in four months, what the side-caster dredges could not do in approximately ten years!

3. Unemployment in Dare County, North Carolina was stated as being 40+ percent. The attached article from the Dare County, North Carolina Coastland Times dated February 2, 1984, stated that unemployment was 14.4 percent in December 1983 per the State of North Carolina Employment Security Commission. The 40+ percent must have been back in 1982-1983 when building construction was virtually non-existent. See attachment No. 2.

4. In testimony given by Harry Brinkley Schiffman which was stated as follows: "I have come across some additional economic information . . . 3,000 boats × 14 trips =42,000 × 4 people = 168,000" the source of this information was not given and should be obtained. Secondly, did these boaters use the Oregon Inlet ocean channel or go to the bridge and drift back into the sound as is so often the case? Ocean going sports vessels are relatively few in number when compared with recreational boats that use the sound and have no need for jetties Thirdly, to provide facilities for "336,000 or well over ¼ million boat trips per year" would require the expenditure of millions in taxpayer's monies in view of the fact the present facilities would have to be greatly expanded from the standpoint of launch ramps, parking lots, public conveniences, and so forth all of which would necessitate the use of federal lands in the Cape Hatteras National Seashore. See attachment 3.

5. The support in North Carolina for the Oregon Inlet jetties is not as great as a few would try to lead others in believing. In fact we know of no prominent North Carolina papers that support the project. Only two local papers in Dare County, North Carolina, home of the proposed project, support jetty construction. Even proponents lament the lack of support by the prominent members of the North Carolina press. This is a matter of public record. See Virginia-Pilot dated December 23, 1983.

We believe that hopper dredging, properly funded, will provide a safe and adequate channel for fishermen, thus saving taxpayers millions and at the same time protecting the environment of the Outer Banks of North Carolina.

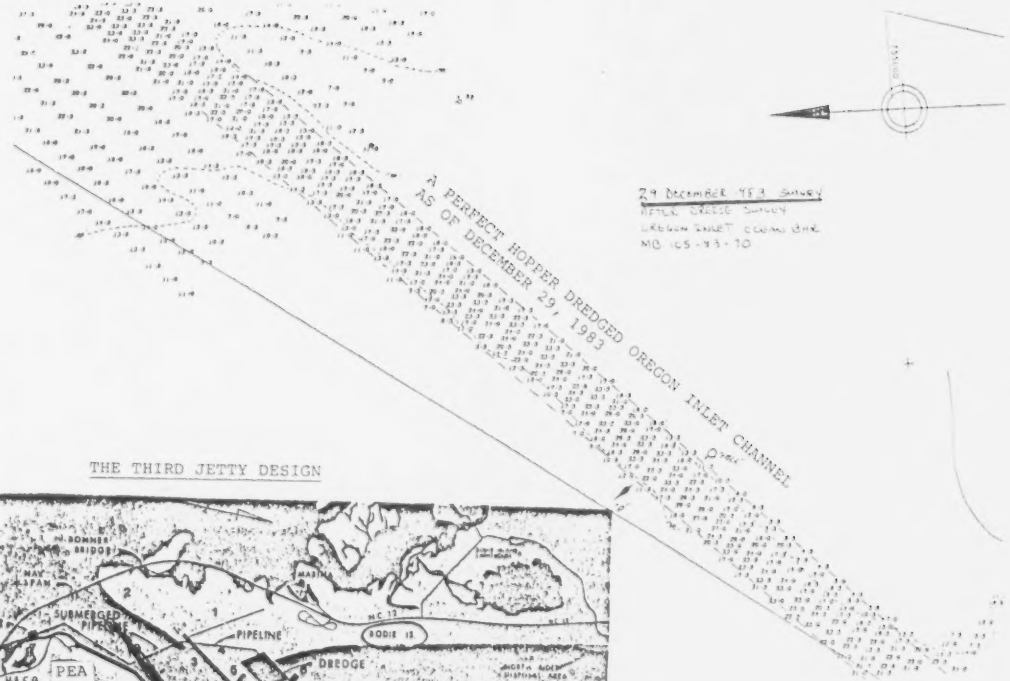
We respectfully request that this letter be included in the record of the hearing held February 7, 1984, as the position of the North Carolina Beach Buggy Association.

Sincerely,

GEORGE C. DEEMS,
*Immediate Past Presidents and Chairman Government and Affiliated Affairs.*

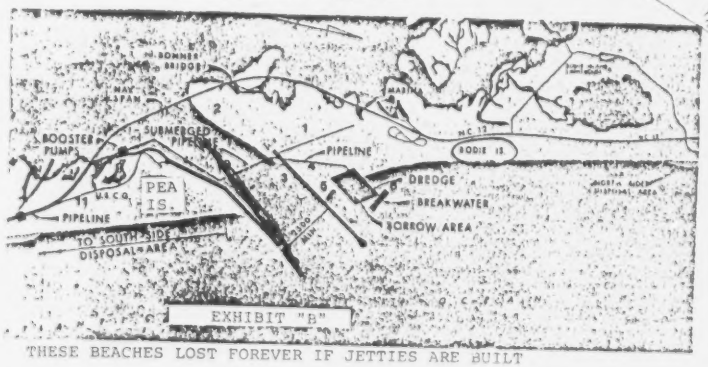
Enclosure.

EXHIBIT "A"


A PERFECT HOPPER DREDGED OREGON INLET CHANNEL
AS OF DECEMBER 29, 1983
29 DECEMBER 1983 SURVEY
NAVAL OCEANO SURVEY
OREGON INLET CHANNEL
MD 165-83-10

# 1,

THE THIRD JETTY DESIGN




THESE BEACHES LOST FOREVER IF JETTIES ARE BUILT

*Tyrrell Again Leads State* #2. C. Times Manteo, NC - 2-2-84

# Dare Unemployment 14.4% In December ESC Report

Dare County unemployment increased to 14.4 percent of the available work force in December according to figures released this week by Employment Security Commission. the figures were based on an estimated 8,200 employables, with 1,180 unemployed. Other counties in the region and their percentages of unemployment are: Beaufort, 9 percent; Currituck, 11.7 percent; Hyde, 14.7 percent; Tyrrell, 24.1 percent; and Washington, 8.7 percent.

December unemployment rates decreased in 62 North Carolina counties, increased in 34 counties and remained the same in four.

Glenn Jernigan, chairman of the North Carolina Employment Security Commission released the figures and said, "The individual county percentages reflect the significant drop of .5 of one percentage point to 7.3 percent, down from 7.8 percent in November 1983. Non-manufacturing contributed most to the decrease with employment up by 6,300 jobs in the Trade sector."

Double digit unemployment rates were posted in 25 counties with Tyrrell the highest at 24.1 percent (340 unemployed). Other counties with rates among the highest were Swain, 23.8 percent (1,110 unemployed); Graham, 19.6 percent (730 unemployed); Pender, 15.6 percent (1,300 unemployed).

Orange County had the state's lowest December unemployment rate, 2.8 percent, down from 3.5 percent in November. Wake and Gates counties each had a 3.9 percent rate. Others followed with Durham, 4.1 percent; Montgomery, 4.3 percent; Watauga, 4.7 percent; and Madison, 5.1 percent.

In all 10 of the state's metropolitan statistical areas (MSAs) unemployment rates were lower in December than November. From lowest to highest rates, Raleigh/Durham led with 3.8 percent, down from 4.4 percent;

See JOBS, Page 8A

Furthermore, I have come across some additional economic information which pertains to recreational boating in which you might be interested. Approximately 3,000 or more small recreational private boats from eastern United States average two (2) weeks usage per summer with an average of approximately four (4) people on board. This computes (3,000 boats X 14 trips = 42,000 X 4 people = 168,000) to 168,000 or more people / trips in the Oregon Inlet area per year. It is fairly estimated that this figure would double if Oregon Inlet were stabilized and maintained thus providing recreation for 336,000 or more people/ boat trips, or well over one quarter ($\frac{1}{4}$) million people/ boat trips. Surely, this type of economic input should not be left out in weighing the justification for the Oregon Inlet, Manteo (Shallowbag) Bay Project. The real life economics are obvious if one is not wearing blinders or ear plugs, and studies with an open mind the benefits and costs of this project. #3.

WHY OREGON INLET SHOULD HAVE JETTIES, BY: PHIL SCARBOROUGH, MANTEO, NORTH CAROLINA

The most damage to our environment has been done by pollution and by destruction of wildlife habitat, jettying of Oregon Inlet will do neither.

I served twenty-three years in the U.S. Coast Guard as a Marine Engineer and all my career was spent on the East Coast of the United States from Maine to Florida except for two years in the Caribbean and two years in the Eastern Mediterranean. Not one time have I ever seen signs of an adverse impact on the Environment caused by jetties and I have never ceased to be amazed by the teeming of Marine life in the crevices of these man-made structures.

The harbor or refuge at Point Judith R.I. is a semicircle of stone jetties with two openings for access to the safe harbor and to Point Judith Pond. I spent the summer of 1950 there and spent countless hours on those jetties fishing, swimming and just plain enjoying myself. What impressed me then (at age 17) was how a bunch of stone chunks placed by man could be such a haven for so many marine creatures.

If Oregon Inlet closed completely it would certainly be disastrous in at least three respects: first, the sounds would rapidly approach stagnant cesspool conditions; second, the sport fishing, commercial fishing and tourist industries of North Eastern North Carolina would be equally devastated; third, mother nature, no doubt, is going to insist that an inlet exists from time to time somewhere between Buxton and Currituck. Some likely spots, to mention a few are Cafey's Inlet (now closed), New Inlet (now closed), Old Nags Head (heavily populated), Whalebone Junction (now developed) Avon (heavily populated). I think these are good reasons that man should give mother nature a little help by building jetties at Oregon Inlet so it will stay right where it is and continue to serve all of us.

Sand moves along the beach, the direction it moves depends on the beach aspect to the prevailing winds and currents. From Cape Henry, Virginia to Cape Hatteras, North Carolina the sand moves Southward, not much moves East and not much moves West. If much sand moved East there would be no Outer Banks, if much sand moved West then our Outer Banks would be large outer islands. If Oregon Inlet is jetied the North side jetty will catch and hold a small portion of the southbound sand and the rest will go on South as its been doing for ages. Mother nature will use her tidal velocities to maintain a deep navigable channel through the narrower passage between the jetties, thereby reducing the River Delta effect. Which at present maintains a shallow bar. A smaller portion of the southbound sand will also accumulate on the South side of the South jetty.

A stabilized inlet in this area would certainly be advantageous should it be deemed necessary to disperse our naval defense capabilities into less concentrated groupings. If submarine chasers could have used Oregon Inlet during World War II, we would have had a marked advantage over the enemy subs that plagued shipping less than a mile from our Outer Banks.

Its a long stretch from Norfolk, Virginia to Morehead City, North Carolina with no harbor in between to accommodate small naval craft that are so vital to our coastal defense, marine safety and law enforcement. The only disadvantage in solving the Oregon Inlet problem is fiscal and everything has its price. Jetties are reasonably permanent, dredging is temporary at best and dredging expenses will eventually equal and surpass that of jetties.

---

VIRGINIA WILDLIFE FEDERATION,
*Virginia Beach, Va. February 7, 1984.*

Rep. JAMES J. HOWARD,
*Chairman, Committee on Public Works & Transportation, 2165 Rayburn House Office Building, Washington, D.C.*

Rep. ROBERT A. ROE,
*Chairman, Subcommittee on Water Resources, Committee on Public Works and Transportation, B376 Rayburn House Office Building.*

DEAR CONGRESSMEN HOWARD AND ROE: The Board of Directors of the Virginia Wildlife Federation, on behalf of its 12,000 members, wish to take this opportunity to inform you, and the other committee members, that the Virginia wildlife Federation supports the North Carolina Wildlife Federation and the National Wildlife Federation in their opposition to the construction of rock jetties at Oregon Inlet in North Carolina by the U.S. Army Corps of Engineers.

The Virginia Wildlife Federation requests therefore that the committees, under your leadership, reject the Oregon Inlet "rider" on HR-3082 (Emergency Wetlands Resources Act, 1983) which would authorize the Secretary of the Army to use cer-

tain lands in connection with the navigation project for Manteo (shallow bag) Bay, North Carolina.

The Virginia Wildlife Federation opposes the construction of jetties, and the "rider", because:

1. Both the Cape Hatteras National Seashore and Pea Island National Wildlife Refuge lands would be lost as a part of a natural heritage. These lands are irreplaceable.

2. The Oregon Inlet "rider" has no relation, whatsoever, to the Emergency Wetlands Resources Act of 1983. The jetties should stand on their own merits.

3. For many years, thousands of our members and their families have used these beaches at Oregon Inlet for recreation purposes (i.e., birdwatching, swimming, hiking, etc.). We believe that present and future generation should be allowed to continue this privilege.

4. The lands that would be affected by the jetties construction now provide superior habitat—nesting and feeding areas—for many species of birds.

5. We believe that the construction of jetties at Oregon Inlet would run contrary to the intent of the the Coastal Barrier Resources Act of 1983.

6. Scientific and economic studies show that the construction of jetties is both economically and environmentally unsound.

7. We believe that hopper dredging, properly funded, will provide a safe and adequate channel for fishermen, thus saving taxpayers millions, and at the time, protect the environment of the Outer Banks of North Carolina.

We urge therefore that your office inform the committee members of this request.

We respectfully request that this letter be included in the record of the hearing held February 7, 1984, as the position of the Virginia Wildlife Federation.

Sincerely yours,

DONALD L. WEST, *President.*

○